

APPENDIX C

**HERITAGE LABORATORIES, INC
ANALYTICAL REPORTS**

C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Project	Lab ID
	24-SEP-93	2586	A291069
	Complete	PO Number	
	04-OCT-93	.....
	Printed	Sampled	
	04-OCT-93	23-SEP-93	

Report To JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	Bill To ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204
---	---

Sample Description
DESCRIPTION: WET GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE	Analysis Date: 27-SEP-93	Test: G401.7.0	
Parameter	Result	Det. Limit	Units
SOLIDS	92	0.001	Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY	Analysis Date: 27-SEP-93	Test: P106.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	8.06		Std. Units
ADJUSTED PH	2.49		Std. Units
BUFFER SOLUTION PH	4.92		Std. Units
FINAL PH	6.49		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10292.5		HRS
FINAL TIME	10310.4		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: B. HAHN

Analysis Date: 28-SEP-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 29-SEP-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.50	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.500		Conc
SAMPLE + ADD 1	1.473		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

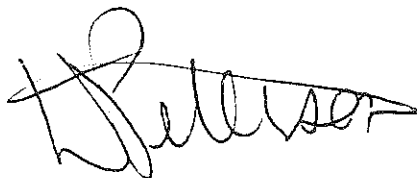
Sample chain of custody number 14997.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received 24-SEP-93	Project 2586	Lab ID A291070
	Complete 04-OCT-93	PO Number	
	Printed 04-OCT-93	Sampled 23-SEP-93	

Report To	Bill To
JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description
DESCRIPTION: DRY DUST FROM DRY GRINDING LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE	Analysis Date: 27-SEP-93	Test: G401.7.0	
Parameter	Result	Det. Limit	Units
SOLIDS	100	0.001	Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY	Analysis Date: 27-SEP-93	Test: P106.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	6.83		Std. Units
ADJUSTED PH	2.41		Std. Units
BUFFER SOLUTION PH	4.92		Std. Units
FINAL PH	6.36		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10292.5		HRS
FINAL TIME	10310.4		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: B. HAHN

Analysis Date: 28-SEP-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 29-SEP-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.20	0.05	mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.198		Conc
SAMPLE + ADD 1	1.187		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

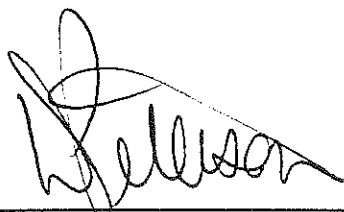
Sample chain of custody number 14997.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received 06-OCT-93	Project 2586	Lab ID A292240
	Complete 19-OCT-93	PO Number VERBAL	
	Printed 20-OCT-93	Sampled 05-OCT-93 14:40	

Report To JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	Bill To ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204
Sample Description SAMPLE ID: 10-5A DESCRIPTION: WET GRINDING DUST LOCATION: LEVEL ONE REPORTING - STANDARD TAT	

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE		Analysis Date: 07-OCT-93	
Test: G401.7.0			
SOLIDS	Parameter	Result	Det. Limit
		84	0.001
			Units
			Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY		Analysis Date: 07-OCT-93	
		Test: P106.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	7.89		Std. Units
ADJUSTED PH	2.93		Std. Units
BUFFER SOLUTION PH	4.95		Std. Units
FINAL PH	6.32		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10432.1		HRS
FINAL TIME	10449.0		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: B. HAHN

Analysis Date: 11-OCT-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 15-OCT-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.94	0.050	mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.941		Conc
SAMPLE + ADD 1	1.918		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

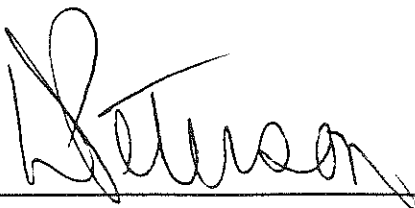
Sample chain of custody number 9051.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Project	Lab ID
	06-OCT-93	2586	A292246
	Complete	PO Number	
	19-OCT-93	VERBAL	
	Printed	Sampled	
	20-OCT-93	05-OCT-93 14:50	

Report To	Bill To
JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description
SAMPLE ID: 10-5B DESCRIPTION: DRY GRINDING DUST LOCATION: LEVEL ONE REPORTING - STANDARD TAT

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE		Analysis Date: 07-OCT-93	
		Test: G401.7.0	
Parameter	Result	Det. Limit	Units
SOLIDS	100	0.001	Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY		Analysis Date: 07-OCT-93	
		Test: P106.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	6.31		Std. Units
ADJUSTED PH	2.42		Std. Units
BUFFER SOLUTION PH	4.95		Std. Units
FINAL PH	6.27		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10432.1		HRS
FINAL TIME	10449.0		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: B. HAHN

Analysis Date: 11-OCT-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 15-OCT-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.12	0.050	mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.120		Conc
SAMPLE + ADD 1	1.151		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

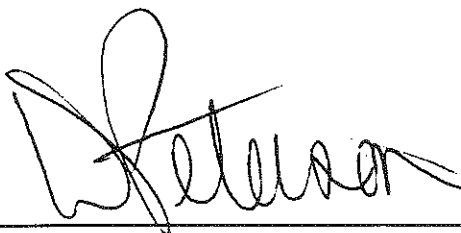
Sample chain of custody number 9051.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 301 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received 14-OCT-93	Project 2586	Lab ID A293259
	Complete 25-OCT-93	PO Number VERBAL	
	Printed 26-OCT-93	Sampled 14-OCT-93 14:45	

Report To JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	Bill To ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204
--	--

Sample Description SAMPLE I.D.: 10-14A DESCRIPTION: WET GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN
--

TOTAL SOLIDS EPA 160.3				
Analyst: B. PRIDEMORE		Analysis Date: 18-OCT-93		Test: G401.7.0
SOLIDS	Parameter	96	Result	Det. Limit 0.001
				Units Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311				
Analyst: C. COFFEY		Analysis Date: 18-OCT-93		Test: P106.1.0
Parameter	Result	Det. Limit	Units	
TOTAL SAMPLE WEIGHT	100		Grams	
LIQUID FRACTION (GRAMS)	0		Grams	
EXTRACTED SAMPLE	100		Grams	
SOLIDS	100		Percent	
9.5 MM SIEVE TEST			Passed	
INITIAL PH	7.57		Std. Units	
ADJUSTED PH	4.95		Std. Units	
BUFFER SOLUTION PH	4.92		Std. Units	
FINAL PH	6.02		Std. Units	
VOLUME BUFFERED SOLUTION	2000		mL	
VOLUME EXTRACT FILTERED	2000		mL	
VOLUME LIQUID (ADD BACK)	0		mL	
TOTAL VOLUME FILTRATE	2000		mL	
AMBIENT TEMPERATURE	23		Degrees C	
INITIAL TIME	10524.1		HRS	
FINAL TIME	10540.7		HRS	
PHASE 0 VOLUME (REP 0)	NA		mL	
PHASE 0 WEIGHT	NA		Grams	
PHASE 0 DENSITY	NA		g/mL	
PHASE 1 VOLUME (REP 1)	NA		mL	
PHASE 1 WEIGHT	NA		Grams	
PHASE 1 DENSITY	NA		g/mL	

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: R. BYERS

Analysis Date: 20-OCT-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 21-OCT-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.25	0.050	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.245		Conc
SAMPLE + ADD 1	1.264		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

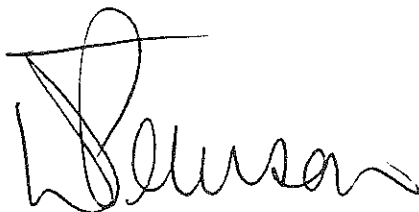
Sample chain of custody number 13053.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 301 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Project	Lab ID
	14-OCT-93	2586	A293258
	Complete	PO Number	
	25-OCT-93	VERBAL	
	Printed	Sampled	
	26-OCT-93	14-OCT-93 14:40	

Report To JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	Bill To ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204
--	--

Sample Description SAMPLE I.D.: 10-14B DESCRIPTION: DRY GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN
--

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE	Analysis Date: 18-OCT-93	Test: G401.7.0	
Parameter	Result	Det. Limit	Units
SOLIDS	100	0.001	Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY	Analysis Date: 18-OCT-93	Test: P106.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	6.84		Std. Units
ADJUSTED PH	2.71		Std. Units
BUFFER SOLUTION PH	4.92		Std. Units
FINAL PH	6.16		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10524.1		HRS
FINAL TIME	10540.7		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: R. BYERS

Analysis Date: 20-OCT-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 21-OCT-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.18	0.050	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.177		Conc
SAMPLE + ADD 1	1.222		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

Sample chain of custody number 13053.

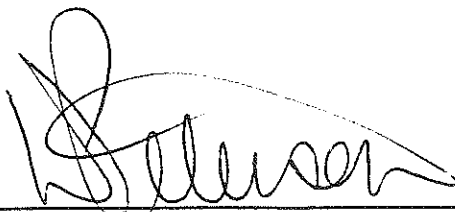
This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204

Quality Assurance Officer: _____



CERTIFICATE OF ANALYSIS

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received 22-OCT-93	Project 2586	Lab ID A293951
	Complete 05-NOV-93	PO Number VERBAL	
	Printed 05-NOV-93	Sampled 20-OCT-93 15:13	

Report To JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	Bill To ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204
---	---

DESCRIPTION: WET GRINDING DUST SAMPLE I.D.: 10-20A LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN	Sample Description
--	--------------------

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE	Analysis Date: 25-OCT-93	Test: G401.7.0	
Parameter	Result	Det. Limit	Units
SOLIDS	82	0.001	Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY	Analysis Date: 25-OCT-93	Test: P106.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	8.41		Std. Units
ADJUSTED PH	2.26		Std. Units
BUFFER SOLUTION PH	4.95		Std. Units
FINAL PH	6.33		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	12771.7		HRS
FINAL TIME	12788.1		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: R. BYERS

Analysis Date: 27-OCT-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 01-NOV-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.054	0.050	mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.054		Conc
SAMPLE + ADD 1	1.076		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

Sample chain of custody number 13055.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Project	Lab ID
	22-OCT-93	2586	A293956
	Complete	PO Number	
	05-NOV-93	VERBAL	
	Printed	Sampled	
	05-NOV-93	20-OCT-93 15:05	

Report To	Bill To
JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178	ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description
DESCRIPTION: DRY GRINDING DUST SAMPLE I.D.: 10-20B LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

TOTAL SOLIDS EPA 160.3			
Analyst: B. PRIDEMORE		Analysis Date: 25-OCT-93	
		Test: G401.7.0	
SOLIDS	Parameter	Result	Det. Limit Units
		100	0.001 Percent

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			
Analyst: C. COFFEY		Analysis Date: 25-OCT-93	
		Test: P106.1.0	
	Parameter	Result	Det. Limit Units
	TOTAL SAMPLE WEIGHT	100	Grams
	LIQUID FRACTION (GRAMS)	0	Grams
	EXTRACTED SAMPLE	100	Grams
	SOLIDS	100	Percent
	9.5 MM SIEVE TEST		Passed
	INITIAL PH	6.40	Std. Units
	ADJUSTED PH	2.09	Std. Units
	BUFFER SOLUTION PH	4.95	Std. Units
	FINAL PH	6.05	Std. Units
	VOLUME BUFFERED SOLUTION	2000	mL
	VOLUME EXTRACT FILTERED	2000	mL
	VOLUME LIQUID (ADD BACK)	0	mL
	TOTAL VOLUME FILTRATE	2000	mL
	AMBIENT TEMPERATURE	23	Degrees C
	INITIAL TIME	12771.7	HRS
	FINAL TIME	12788.1	HRS
	PHASE 0 VOLUME (REP 0)	NA	mL
	PHASE 0 WEIGHT	NA	Grams
	PHASE 0 DENSITY	NA	g/mL
	PHASE 1 VOLUME (REP 1)	NA	mL
	PHASE 1 WEIGHT	NA	Grams
	PHASE 1 DENSITY	NA	g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: R. BYERS

Analysis Date: 27-OCT-93

Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	100		mL

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. STOCKBURGER

Analysis Date: 01-NOV-93

Instrument: FAA

Test: M610.5.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.12	0.050	mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.120		Conc
SAMPLE + ADD 1	1.140		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

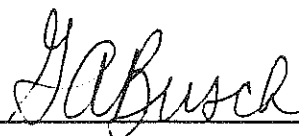
Sample chain of custody number 13055.

This Certificate shall not be reproduced, except in full,
without the written approval of the lab.

Additional copies of this report sent to:

MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204



APPENDIX D
MATERIAL INFORMATION

NORTON

Flammability Rating

Health Rating

Reactivity Rating

HAZARD RATING

Please rate consistent with NFPA Code

MATERIAL SAFETY DATA SHEET**SECTION I NAME AND PRODUCT**

MANUFACTURER'S NAME NORTON COMPANY	CONTACT THOMAS Z. RICHARDS
ADDRESS (STREET, CITY, STATE AND ZIP CODE) 1 NEW BOND STREET, WORCESTER, MA 01615-0008	EMERGENCY TELEPHONE NO. 508-795-2690
TRADE NAME, COMMON NAME OR SPECIFICATION VITRIFIED BONDED - ABRASIVE PRODUCTS	APPROVED BY <i>K. Marayan</i> DATE <i>April 17, 1990</i>
CHEMICAL FAMILY OR PRODUCT TYPE ANY GRADE	

SECTION II COMPOSITION PER 29CFR 1910.1200 (G) (4)

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS #	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCINOGEN (Y/N)
Alpha-Alumina	96	Alundum, Seeded Gel	Y	1344-28-1	10mg/m ³ (Total Dust)	10mg/m ³ (Total Dust)	N
OR Silicon Carbide	96	Crystolon	Y	409-21-2	10mg/m ³ (Total Dust)	10mg/m ³ (Total Dust)	N
Sulfur Treatment	41	No. 22 Treat	Y	7704-34-9	**NAIF	**NAIF	N

Note: Wheel Treatment ranges from 21 to 41% concentration based on wheel weight.

*Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations.

SECTION III PHYSICAL AND CHEMICAL DATA

BOILING POINT **NAIF	MELTING POINT **NAIF	SPECIFIC GRAVITY 2-4
VAPOR PRESSURE **NAIF	PERCENT VOLATILE BY VOL **NAIF	VAPOR DENSITY **NAIF
EVAPORATION RATE **NAIF	SOLUBILITY IN WATER Slight	SOLUBILITY IN ALCOHOL **NAIF
SOLUBILITY IN OTHER SOLVENT **NAIF	APPEARANCE AND ODOR SOLID PRODUCT: MAY GIVE OFF ODOR IN USE.	

SECTION IV SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE - NONE.

OTHER PRECAUTIONS:

**NAIF

SECTION V CORROSIVITY AND REACTIVITY DATA

STABILITY <input type="checkbox"/> UNSTABLE <input checked="" type="checkbox"/> STABLE	POLYMERIZATION <input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR
INCOMPATIBILITY (MATERIALS TO AVOID) Avoid acids of all types with a PH <= 4.0	
DECOMPOSITION PRODUCTS In use, dusts are generated. In most cases, the airborne material removed from the workpiece will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.	
CONDITIONS TO BE AVOIDED **NAIF	

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA

PRIMARY ROUTE(S) OF ENTRY	ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE	FIRST AID AND MEDICAL INFORMATION
INHALATION (During Grinding)	ACUTE: COUGHING, SHORTNESS OF BREATH. CHRONIC: MAY AFFECT BREATHING CAPACITY.	REMOVE TO FRESH AIR. ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ASSISTANCE.
INGESTION (During Grinding)	NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.	OBTAIN MEDICAL ASSISTANCE.
SKIN (During Grinding) CONTACT & ABSORPTION	SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.	WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
EYE (During Grinding)	DUSTS MAY IRRITATE EYES.	WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AID AND MEDICAL ASSIS- TANCE, IF NEEDED.
OTHER POTENTIAL HEALTH RISKS (During Grinding)	GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CON- DITIONS.	OBTAIN MEDICAL ASSISTANCE. THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.

SECTION VII STORAGE, HANDLING AND USE PROCEDURES

NORMAL STORAGE AND HANDLING SEE ANSI STANDARD B7.1.
NORMAL USE HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CONTAMINANTS)
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS. NORMAL CLEANUP PROCEDURES.
*** STE DISPOSAL METHOD STANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS.

SECTION VIII PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.	
VENTILATION	LOCAL RECOMMENDED
	MECHANICAL (GENERAL) RECOMMENDED
	OTHER **NAIF
PROTECTIVE GLOVES	AS DESIRED BY USER
EYE PROTECTION	RECOMMENDED SEE OSHA 29CFR 1910.133
OTHER EQUIPMENT	AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95 (HEARING PROTECTION)
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL.	
SEE SECTION VII & VIII	

SECTION IX FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	**NAIF	METHOD USED	***N/A	FLAMMABLE LIMITS	LEL N/A	UEL ***N/A
EXTINGUISHING MEDIA		USE WATER				
SPECIAL FIRE FIGHTING PROCEDURES		NONE				
EXPLOSION POTENTIAL		**NAIF				

FOR COMPANY USE

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability.

June 18, 1991

HOOSIER SPLINE
1401 Touby Pike
Kokomo IN 46901

JUN 20 1991

Subject: Hazardous Waste

Attention: Gilbert Larison

Mr. Gilbert Larison

Per our conversation concerning the percent of chrome in our material and the waste created from the material. In checking the certifications of the material we supply you, basically CPM-M4, the chrome content ranged from 3.82 to 4.02 with the majority being between 3.82/3.88.

This would indicate to us that the chrome content of the waste would be less than 4%. We hope this is the information you required.

Thank You,

Bob Eyer
Bob Eyer

Outside Sales Representative

BEyer/jkd



***** CERTIFICATE OF ANALYSIS *****

Description/Size: H.S.S. AISI M-2 1 5/16 x 2 7/16 HOT ROLLED HEAT # 26059

HEAT NO.	TYPE	C	Si	Mn	Cr	Mo	W	V	P	S	Co	Ni
26059	M-2	.87	.30	.27	4.25	4.78	6.05	1.75	.024	.015	---	----

17253

○ SUPREME

22900 HOOVER, WARREN, MI 48089

(313) 759-5430 FAX (313) 759-2365

***** CERTIFICATE OF ANALYSIS *****

Description/Size: H.S.S. AISI

M-2 5/8 x 1/2 HOT ROLLED JOB# 18,460 HEAT# H24212

M-2 $1\frac{5}{16} \times 1\frac{5}{16}$ HOT ROLLED JOB# 18,461 HEAT# H24360

M-3 TYPE I $\frac{3}{4} \times \frac{13}{16}$ HOT ROLLED JOB # 18,470 HEAT # Z399

M-2 $1\frac{3}{16} \times 1\frac{9}{16}$ HOT ROLLED JOB #18,471 HEAT #G22788

[illegible]



JAN 14 1992

LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 01/09/92

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: JOB 19400

Branch Order No: 03-012-00830

Mill Order Number:

Size: 7/8 X 1-1/2

Weight: 15

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT NUMBER	GRADE	AISI TYPE	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--NO-	--CO-	-CU-	-AL-	-N2-
A6115	D-SIX	M2	0.85	0.35	0.33	0.001	0.024	6.21	4.01	1.89	0.21	4.87	0.32	0.11		0.04

William A. Hill
Supervisor - Test Submission
and Certification

LATROBE STEEL COMPANY
Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.

MILL TEST REPORT

GRIGGS STEEL CO.
15431 W. ELEVEN MILE RD.
OAK PARK, MI 48237

Sold To: HOOSIER SPLINE BROACH
1401 TOUBY PIKE
KOKOMO, IN 46903

OrigOrder# 009012

Order Date 1/05/93

Desc M-2 H.R. 1-5/16 X 1-11/16 Quantity

Chemical Composition Heat# 21173

C 34	SI .22	MN .29	P .019	S .001
CR 4.01	W 6.02	MO 4.95	V 1.87	CO

Heat Treatment of Test Specimen

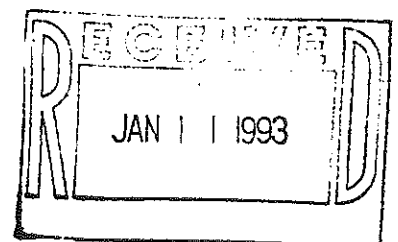
Quenching		
Preheat Temp.	Temp.	Cooling
30	1220	00

Tempering				
Temp.	Time	Cooling	Repeat	Hardness
570	60 MIN.	AC	2	64.00

Decarburization	Microstructure	Condition as Shipped
GOOD	GOOD	Hardness 229

Signed... *S. Chutorash*

20497





LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 02/09/90

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: SEE BELOW

Branch Order No:

Mill Order Number:

Size: 2-1/8 RD

Weight: 55#

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT NUMBER	GRADE	AISI TYPE	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--MO-	--CO-	-CU-	-AL-	-N2-
A6209	CORSAIR	M3-1	1.03	0.34	0.28	0.006	0.019	6.08	3.91	2.38	0.23	4.91	0.33	0.12	0.01	0.04

JOB 17262

William A. Hill
Product Compliance Specialist

LATROBE STEEL COMPANY
Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.

SUPREME

22900 HOOVER, WARREN, MI 48089

(313) 759-5430 FAX (313) 759-2365

***** CERTIFICATE OF ANALYSIS *****

Description/Size: H.S.S. AISI M-2 5/8 x 1/2 HOT ROLLED JOB# 18,460 HEAT# H24212

M-2 1 5/16 x 1 5/16 HOT ROLLED JOB# 18,461 HEAT# H24360

M-3 TYPE I $\frac{3}{4} \times \frac{13}{16}$ HOT ROLLED JOB # 18,470 HEAT # Z399

M-2 | $\frac{3}{16} \times \frac{9}{16}$ HOT ROLLED JOB # 18,471 HEAT # G22788

[illegible]



JAN 14 1992

LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 01/09/92

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: JOB 19405

Branch Order No: 05-012-00830

Mill Order Number:

Size: 1-1/2 X 1-5/8

Weight: 45

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT NUMBER	GRADE	AISI TYPE	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--MO-	--CO-	-CU-	-AL-	-N2-
A7147	CORSAIR	M3-1	1.01	0.31	0.26	0.014	0.023	5.94	3.90	2.33	0.22	4.91	0.33	0.11		0.04

William A. Hill
Supervisor - Test Submission
and Certification

LATROBE STEEL COMPANY
Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.



LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY
LATROBE, PENNSYLVANIA 15650-3294 USA • 412-537-7711

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Report Date: 01/12/93

Your order number: JOB 20494

Branch Order No: 01-013-00540

Mill Order Number: -

Size: 1-1/8 X 1-3/8

Weight: 8-1/2#

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT	GRADE	AISI	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--MO-	--CO-	-CU-	-AL-	-N2-
A6432	CORSAIR	M3-1	1.02	0.33	0.23	0.014	0.022	5.87	3.87	2.35	0.25	4.86	0.35	0.12		0.05

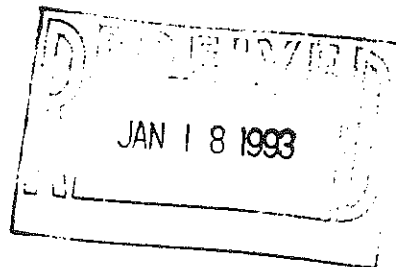
William A. Hill

Supervisor - Test Sub. and Cert

LATROBE STEEL COMPANY

Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.



GRIGGS STEEL COMPANY

#17271

15431 W. ELEVEN MILE ROAD

OAK PARK, MICHIGAN 48237

(313) 541-6226

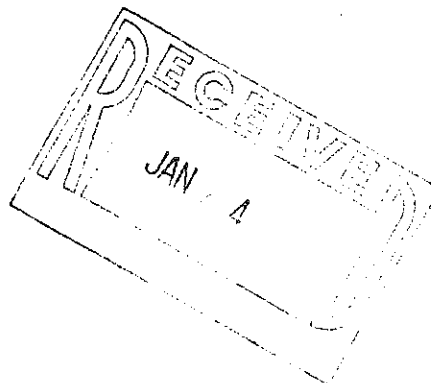
M-42 H.R. 7/8 X 1-1/2

622#

10-9-89

HEAT #X4120A

C	1.06
SI	0.20
MN	0.25
CR	3.58
MO	9.03
W	1.41
V	1.05
CO	7.93
S	0.025
P	0.022
NI	0.12



GRIGGS STEEL CO.
15431 W. Eleven Mile
Oak Park, MI 48237
HIGH SPEED TOOL STEEL

Job: #s 18524, 18-25

TEST CERTIFICATE

FEB 12 1991

Contract No. 150307

Material M42

Condition ANNEALED

DESCRIPTION	HS NO. 7228.10.00303 OTHER BARS OF COLD-FORMED HIGH-SPEED STEEL RANDOM LENGTH
-------------	---

REC'D

SEPT 11 1989

REC'D

Report No.	Date	
M9070114	Month	Day
	07	20

Case No.	Size ()	No of Piece	Weight (LBS)	Heat No.
6071	RB0.562" (RB14.681MM)	43	463	40272

		Chemical Composition (%)														
		C	Si	Mn	P	S	Ni	Cr	W	Mo	V	Co				
Spec		1.00 -1.10	0.20 -0.40	0.20 -0.40	MAX 0.030	MAX 0.015		3.50 -4.00	1.25 -1.75	9.00 -10.00	1.00 -1.50	7.75 -8.25				
Result		1.08	0.32	0.25	0.022	0.002		3.62	1.35	9.40	1.03	7.91				

No.	Condition as Shipped		Heat Treatment For Test Specimen										Decarburized	
			Preheat	Quenching				Tempering						
	Hardness	Tensile Strength		Temp.	Temp.	Time	Cooling	Hardness	Temp.	Time	Cooling	Repeat		Hardness
	HB			°C	°C				°C	MIN		TIMES		HRC
	≤269											67-70		
Result	255-260		880	1200		0C		550	60	AC	3	68.8	GOOD	

Run	Annealing Test	Microstructure	Macrostructure	Grain Size
Result		GOOD		

MILL TEST REPORT

GRIGGS STEEL CO.
15431 W. ELEVEN MILE RD.
OAK PARK, MI 48237

Order To: HOOSIER SPLINE BROACH
1401 TOUBY PIKE
KOKOMO, IN 46903

OrigOrder# 009233

Order Date 1/12/93

Desc M-42 D.F. 1.515" DIA. Quantity

Chemical Composition		Heat#		44433	
C 0.07	SI 0.29	MN 0.30	P 0.022	S 0.002	
CR 3.79	W 1.40	MO 9.27	V 1.12	CO 7.87	

Heat Treatment of Test Specimen

Quenching					
Heat Temp.	Temp.	Cooling			
1200	1200	OQ			
Tempering					
Temp.	Time	Cooling		Repeat	Hardness
150	60 MIN.	AC		3	68.00
Decarburization		Microstructure		Condition as Shipped	
GOOD		GOOD		Hardness 241	

igned. *S. Chutorask....*

20499

GRIGGS STEEL CO.
15431 W. Eleven Mile
Oak Park, MI 48237
HIGH SPEED TOOL STEEL

TEST CERTIFICATE

FEB 6 1992

HS NO. 7228.10.00606

DESCRIPTION	OTHER	BARS OF COLD-FORMED HIGH-SPEED STEEL
	RANDOM LENGTH	

Contract No. 150964

Material M42

Condition ANNEALED

Report No.	Date		
M0120045	Month 12	Day 13	Year 1990

Case No.	Size ()	No. of Piece	Weight (LBS)	Heat No.
6614	RB1-5/8" (RB41.275MM)	9	838	42874

[illegible]



LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 02/09/90

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO, IN 46901

Your order number: 17256

Branch Order No:

Mill Order Number:

Size: 1/2 X 1

Weight: 2#

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT NUMBER	GRADE	AISI TYPE	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--MO-	--CO-	-CU-	-AL-	-N2-
G1734	STARK	M-4	1.38	0.30	0.38	0.07	0.017	5.45	4.30	3.90		4.50	0.39			0.04

JOB 17256

William A. Hill
Product Compliance Specialist

LATROBE STEEL COMPANY
Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.

GRIGGS STEEL CO.
15431 W. Eleven Mile
Oak Park, MI 48237
HIGH SPEED TOOL STEEL

Job: # 18537

TEST CERTIFICATE

Report No.	Date		
M900862	Month	Day	Year
	7	14	

Messrs.

Contract No 150781

Material HAP-M4

FEB 1 1991

CONDITION HOT ROLLED & SPHEROIDIZED ANNEALED

HS No. : 7228.10.0010

DESCRIPTION : OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH

REC'D

SEPT 12 90

REC'D

FILED

Item	Case No	Size (INCH) : (MM)	No of Piece	Weight (LBS)	Heat No.
1	4090	F1-1/8"x1-3/4" : F28.575x44.45	3	233	H4072
2					
3					

Chemical Composition (%)											
C	Si	Mn	P	S	Ni	Cr	W	Mo	V	Co	
1	1.38	0.30	0.31	0.016	0.005		4.06	5.88	4.61	4.06	0.26
2											
3											

Heat Treatment For Test Specimen											Decarburization
Hardness as Shipped		Preheat	Quenching				Tempering				
HB	Temp. °C	Temp. °C	Time	Cooling	Hardness	Temp. °C	Time MIN	Cooling	Repeat TIMES	Hardness HRC	
1	241	880				560	60	AC	2	65.8	GOOD
2											
3											

Microstructure	Macrostructure	Grain Size	
		NO.	
1	GOOD	13.0	
2			
3			

CERTIFICATE OF TEST

CRUCIBLE MATERIALS CORPORATION
SPECIALTY METALS DIVISION
1201 PIEDMONT
TROY MI 48083

S
H
I
P
T
O

CRUCIBLE MATERIALS CORPORATION
SPECIALTY METALS DIVISION
1201 PIEDMONT
TROY MI 48083

OUR ORDER NO

33 05754 1

DATE

12/18/91

CUSTOMER ORDER # & DATE

CUSTOMER REQ. #

DISTRICT

DETROIT

SHIPPED
FROM

SYRACUSE

DESCRIPTION OF MATERIAL

CPM REX M4 TF SA

SIZE

1.390 RD

COMM CODE

115 9028

TEST NO.

CHEMICAL ANALYSIS

P78817-2	C	MN	P	S	SI	CR	V	W	MO
	1.37	.35	.022	.070	.42	3.89	3.92	5.42	4.44

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

1537 # P78817-2

HARDNESS

BHN 229/ 241

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
NO WELD REPAIR PERFORMED
MATERIAL MELTED IN U.S.A.

MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

THANK YOU FOR SELECTING A QUALITY PRODUCT

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF , 19

NOTARY PUBLIC

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACC.
WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE
SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

CERTIFIED
BY

QUALITY ASSURANCE REPRESENTATIVE

LEWIS CUDO - SUPERVISOR CERTS. AND SPECS. DEPT.

**Crucible
Service Centers**
A Division of Crucible Materials Corporation

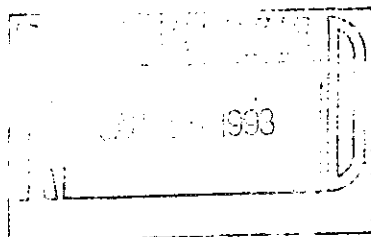
5639 W. Genesee St.
Camillus, NY
13031-0977

CERTIFICATE OF TEST

S O HOOSIER SPLINE BROACH CORP L 1401 TOUBY PIKE D P O BOX 538 T KOKOMO IN 46901 O		S H HOOSIER SPLINE BROACH CORP I P 1401 TOUBY PIKE T KOKOMO IN 46901 O		OUR ORDER NO. 46-11703 DATE 01/05/93
CUSTOMER ORDER # & DATE		CUSTOMER REQ. #		DISTRICT
20493 01/05/93				DETROIT
SHIPPED FROM				
INDAPOLS				
DESCRIPTION OF MATERIAL				
1 CPM M4 TFA .530 X 1.500				

ITEM NO.	SIZE	QUANTITY	HEAT NO.	MECHANICAL PROPERTIES					
				YIELD PSI	TENSILE PSI	%ELONG IN.	%RED AREA	HARDNESS	IMPACT
1	SEE ABOVE	1136#	P66094-1					BHN 255	

HEAT NO.	CHEMICAL PROPERTIES											
	C	MN	P	S	SI	NI	CR	V	W	MO	CU	CO
P66094-1	1.40	0.37	0.019	0.061	0.54		3.87	3.92	5.43	5.14		



THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THOSE SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION

ACTING BY AND THROUGH ITS SERVICE CENTERS DIVISION

CERTIFIED BY:

Julie Anthony
Julie Anthony

QUALITY ASSURANCE REPRESENTATIVE



LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 02/09/90

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: SEE BELOW

Branch Order No:

Mill Order Number:

Size: .3900 RD

Weight: 2#

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT NUMBER	GRADE	AISI TYPE	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--MO-	--CO-	-CU-	-AL-	-N2-
G1821	T15	T15-PH	1.58	0.27	0.31	0.07	0.012	12.60	4.20	5.00		0.14	5.05			0.04

JOB 17281

William A. Hill
Product Compliance Specialist

LATROBE STEEL COMPANY
Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.

GRIGGS STEEL CO.
 15431 W. Eleven Mile
 Oak Park, MI 48237
 HIGH SPEED TOOL STEEL

TEST CERTIFICATE

JAN 10 1991

Report No	Date		
M900877	Month	Day	Year
	7	17	1990

Messrs.

Contract No 150747

Material HAP-T15

CONDITION HOT ROLLED & SPHEROIDIZED ANNEALED

HS No. : 7228.10.00107

DESCRIPTION : OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH

Item	Case No	Size (INCH)	(MM)	No. of Piece	Weight (LBS)	Heat No
1	4123	F1-1/16"x1-5/16"	F26.988x33.338	4	273	H4041
2						
3						

Item	Chemical Composition (%)										
	C	Si	Mn	P	S	Ni	Cr	W	Mo	V	Co
1	1.55	0.28	0.31	0.018	0.006		4.03	12.09	1.01	4.99	5.00
2											
3											

ITEM NO.	Hardness as Shipped	Heat Treatment For Test Specimen										Decarburization	
		Preheat Temp.	Quenching				Tempering						
			Temp.	Time	Cooling	Hardness	Temp.	Time	Cooling	Repeat	Hardness		
													°C
1	269	880	1240			OC		560	60	AC	3	67.5	GOOD
2													
3													

Item	Microstructure	Macrostructure	Grain Size
			NO.
1	GOOD	GOOD	14.2
2			
3			

18465
 18466
 18467

REC'D

SEPT 12 90

RECEIVED

1990

GRIGGS STEEL CO.

1111 W. Eleven Mile

Can. Park, MI 48237.

HIGH SPEED TOOL STEEL

TEST CERTIFICATE

Messrs.

Contract No 150949

Material HAP-T15

CONDITION HOT ROLLED & SPHEROIDIZED ANNEALED

19397

Report No	Date		
M910029	Month	Day	Year
	1	18	1991

HS No. : 7228.10.00107

DESCRIPTION : OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH

Item	Case No	Size (INCH)	(MM)	No of Piece	Weight (LBS)	Heat No
1	4521	F13/16"x1-13/16"	F20.638x46.038	4	255	H4431
2						
3						

Item	Chemical Composition (%)										
	C	Si	Mn	P	S	Ni	Cr	W	Mo	V	Co
1	1.56	0.30	0.30	0.019	0.002		3.97	11.90	1.21	4.88	5.04
2											
3											

Item	Hardness as Shipped	Heat Treatment For Test Specimen										Decarburization
		Preheat	Quenching				Tempering					
	HB	Temp. °C	Temp. °C	Time	Cooling	Hardness	Temp. °C	Time MIN	Cooling	Repeat TIMES	Hardness HRC	
1	269	880	1240		OC		560	60	AC	3	67.0	GOOD
2												
3												

Item	Microstructure	Macrostructure	Grain Size
			NO.
1	GOOD	GOOD	14.2
2			
3			

REC'D

MAR 07 '91

REC'D



LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY
LATROBE, PENNSYLVANIA 15650-3294 USA • 412-537-7711

HOOSIER SPLINE BROACH
1401 TOUBY PIKE
P.O. BOX 538
KOKOMO, IN 46901

Report Date: 01/15/93

Your order number: JOB 20498
Branch Order No: 03-013-02130

Mill Order Number: -
Size: 1.1400 RD
Weight: 44#

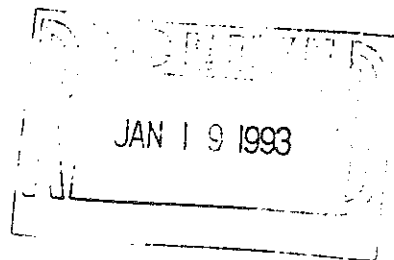
CERTIFICATE OF CHEMICAL ANALYSIS

HEAT	GRADE	AISI	-C--	-SI-	-MN-	-S---	-P---	--W--	--CR-	--V--	--NI-	--MO-	--CO-	-CU-	-AL-	-N2-
G1928	T15 PH	T15	1.57	0.31	0.32	0.07	0.017	12.24	4.02	5.01	0.11	0.20	5.01	0.05		0.02

William A. Hill
Supervisor - Test Sub. and Cert

LATROBE STEEL COMPANY
Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.



MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION



KONCOR INDUSTRIES
DIVISION OF LATROBE STEEL COMPANY
SUBSIDIARY OF THE TIMKEN COMPANY
Wauseon, Ohio 43567
AREA CODE 419-335-8010

TRADE NAME: LESCO M-4 PMGRADE SPECIFICATION DATE: 12/04/89MSDS REVISION DATE 02/89

- HOOSIER SPLINE BROACH CORP
- 1401 TOUBY PIKE
- P O BOX 538
-
- KOKOMO

IN 46903

APR 4 1991

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	PERCENT	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)
CARBON	7440-44-0	1.28	3.5	3.5
CHROMIUM	7440-47-3	4.50	0.5	0.50 *
IRON	1309-37-1	GT 50	10.0	5
MOLYBDENUM	7439-98-7	4.50	10.0 TOTAL DUST 5.0 RESP. FRACT	10
VANADIUM	1314-62-1	4.00	0.05 (DUST) 0.05 (FUME)	0.05 *
TUNGSTEN	7440-33-7	5.50	5.0	5

* REGULATED AS A TOXIC CHEMICAL UNDER SECTION 313, SARA TITLE III
AND 40 CFR 372

III. PHYSICAL DATA

BOILING POINT:	≥ 5000°F	MELTING POINT:	Approximately 2500°F
SPECIFIC GRAVITY (H ₂ O=1):	Approx. 7.8-8.2 (60°F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1):	N/A	SOLUBILITY IN H ₂ O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1):	N/A
APPEARANCE AND ODOR:	Various Shapes, Solid Odorless Metal		

IV. FIRE AND EXPLOSION DATA

FLASH POINT:	None	FIRE POINT:	None
--------------	------	-------------	------

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:

Inhalation - Eye Contact - Skin Contact -
Ingestion

EMERGENCY FIRST AID:

Remove to fresh air, if condition continues - consult physician.
Flush well with running water to remove particulate. Get medical attention.
Brush off excess dust. Wash area well with soap and water.
Seek medical help if large quantities of material have been ingested.

EFFECTS OF OVEREXPOSURE:

ACUTE: Short term overexposure to the dust, fumes and/or oxides of certain components of steel products may cause irritation of the eyes, nose or throat; or, may result in metal fume fever characterized by a metallic or sweet taste, dryness and irritation of the throat, wheezing, discoloration of the tongue and flu-like symptoms.

CHRONIC: Excessive and prolonged overexposure to the dust fumes and/or oxides of certain components of steel products may result in chronic interstitial pneumonitis, discoloration of the skin and hair; allergic bronchitis, neoplasms or loss of coordination and balance.

REFER TO PAGE 2 FOR THE EFFECTS OF OVEREXPOSURE TO SPECIFIC ELEMENTS.

EFFECTS OF OVEREXPOSURE CONT'D.:

ACUTE:

CARBON (C) — Irritation of eyes and mucous membranes.

MANGANESE (Mn) — Irritation of eyes, nose and throat; metallic taste in the mouth; acute pneumonia and pneumonitis (respiratory disease).

IRON (Fe) — Irritation of eyes, nose and throat; metal fume fever.

CHROMIUM (Cr) — Irritation of eyes and mucous membranes, dermatitis, skin ulcers and nasal septum perforation.

NICKEL (Ni) — Irritation of eyes and mucous membranes; dermatitis; "nickel itch", pulmonary edema, asthma, headache and vomiting.

MOLYBDENUM (Mo) — Irritation of eyes and mucous membranes.

VANADIUM (V) — As vanadium pentoxide dust or fumes, it may cause irritation of eyes, nose and respiratory tract.

ALUMINUM (Al) — Possible irritation of eyes and mucous membranes.

COBALT (Co) — Irritation of eyes and mucous membranes.

COPPER (Cu) — Irritation of eyes, nose and throat; metal fume fever.

BORON (B) — Irritation of nose and throat.

TANTALUM (Ta) — Dust may cause slight irritation to eyes, nose and throat.

TITANIUM (Ti) — Considered a physiologically inert dust; however, high concentrations may cause irritation of eyes and mucous membranes.

TUNGSTEN (W) — No adverse health effects have been reported in humans.

CHRONIC:

CARBON (C) — Irritation of eyes and mucous membranes.

MANGANESE (Mn) — Inhalation of fumes and dust can cause central nervous system disturbances, increased upper respiratory disorders and infections, cumulative lung damage, psychiatric disorders, liver cirrhosis and anemia.

IRON (Fe) — Inhalation of iron oxide fumes and dust may cause chronic bronchitis, conjunctivitis, choroiditis, retinitis and siderosis of tissues.

CHROMIUM (Cr) — The toxicity and health hazards of chromium are heavily dependent upon its oxidation state. Trivalent and divalent chromium, as in chromium metal and chromium-containing alloys have a low order of toxicity. The hexavalent form (chromates and chromic acids) may cause irritant and allergic contact dermatitis, skin ulcers and nasal irritation varying from rhinitis to perforation of the nasal septum. Reported carcinogen.

NICKEL (Ni) — Nickel dust or fume can cause sensitization dermatitis, "nickel itch", and may cause cancer of the paranasal sinuses and lungs.

MOLYBDENUM (Mo) — Human industrial poisoning by molybdenum has yet to be reported.

VANADIUM (V) — As vanadium pentoxide dust or fumes, it may cause irritation of eyes, nose and respiratory tract (More severe than acute exposure), chronic bronchitis and allergic skin rash.

ALUMINUM (Al) — Possible irritation of eyes and mucous membranes. Reported as a cause of pulmonary fibrosis.

COBALT (Co) — May cause allergic skin rashes and respiratory disease.

COPPER (Cu) — Skin irritation; discoloration of the skin or the hair and metal fume fever.

BORON (B) — Possible irritation of the respiratory tract and nose bleeds.

TANTALUM (Ta) — Dust may be slight irritant to eyes, nose and throat.

TITANIUM (Ti) — Considered a physiologically inert dust; however, high concentrations may cause irritation of eyes and mucous membranes.

TUNGSTEN (W) — No adverse health effects have been reported in humans.

CARCINOGENICITY:

	NTP	IARC MONOGRAPHS	OSHA REGULATED
CHROMIUM (Cr)	YES	YES	YES, PEL established
NICKEL (Ni)	YES	YES	YES, PEL established

VI. REACTIVITY DATA

STABILITY:

Chemically Stable

INCOMPATIBILITY:

Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS DECOMPOSITION PRODUCTS:

Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

Solids — Sale as Scrap

Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General — Recommended. Local — As Required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended.

Gloves:

As required.

Other Clothing or Equipment:

As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION

**LATROBE STEEL COMPANY**

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650

AREA CODE 412 - 537-7711

TRADE NAME: CORSAIR XL (M-3 TYPE-1XL)GRADE SPECIFICATION DATE: 03/13/86

DEC 1 8 1990

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)
CHROMIUM	7440-47-3	1.0	.50
IRON	1309-37-1	10	5
MOLYBDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .5*	.05
		(FUME) .1*	.05
TUNGSTEN	7440-33-7	N/E**	5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON*** CEILING LIMITS **N/E NOT ESTABLISHED**

III. PHYSICAL DATA

BOILING POINT:	≥ 5000°F	MELTING POINT:	Approximately 2500°F
SPECIFIC GRAVITY (H ₂ O=1):	Approx. 7.8-8.2 (60°F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1):	N/A	SOLUBILITY IN H ₂ O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1):	N/A
APPEARANCE AND ODOR:	Various Shapes, Solid Odorless Metal		

IV. FIRE AND EXPLOSION DATA

FLASH POINT: None FIRE POINT: None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:	Inhalation	EMERGENCY FIRST AID:	Remove to fresh air, if condition continues - consult physician
	Eye Contact		Flush well with running water to remove particulate. Get medical attention.
	Skin Contact		Brush off excess dust. Wash area well with soap and water.
	Ingestion		Seek medical help if large quantities of material have been ingested.

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

VI. REACTIVITY DATA

STABILITY:	Chemically Stable
INCOMPATIBILITY:	Reacts with Strong Acids to Generate Hydrogen Gas
HAZARDOUS DECOMPOSITION PRODUCTS:	Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:	N/A
WASTE DISPOSAL METHOD:	Solids — Sale as Scrap Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:	General — Recommended. Local — As Required.
PERSONAL PROTECTIVE EQUIPMENT:	
Respiratory Protection:	If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.
Eye Protection:	Recommended.
Gloves:	As required.
Other Clothing or Equipment:	As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION

**LATROBE STEEL COMPANY**

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650

AREA CODE 412 - 537-7711

TRADE NAME: DOUBLE SIX (M-2)GRADE SPECIFICATION DATE: 03/13/86

DEC 16 1990

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)
CHROMIUM	7440-47-3	1.0	.50
IRON	1309-37-1	10	5
MOLYBDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .5*	.05
		(FUME) .1*	.05
TUNGSTEN	7440-33-7	N/E**	5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON*** CEILING LIMITS **N/E - NOT ESTABLISHED**

III. PHYSICAL DATA

BOILING POINT:	≥ 5000°F	MELTING POINT:	Approximately 2500°F
SPECIFIC GRAVITY (H ₂ O=1):	Approx. 7.8-8.2 (60°F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1):	N/A	SOLUBILITY IN H ₂ O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1):	N/A
APPEARANCE AND ODOR:	Various Shapes, Solid Odorless Metal		

IV. FIRE AND EXPLOSION DATA

FLASH POINT: None FIRE POINT: None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:	Inhalation	EMERGENCY FIRST AID:	Remove to fresh air, if condition continues - consult physician
	Eye Contact		Flush well with running water to remove particulate. Get medical attention.
	Skin Contact		Brush off excess dust. Wash area well with soap and water.
	Ingestion		Seek medical help if large quantities of material have been ingested.

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

VI. REACTIVITY DATA

STABILITY:	Chemically Stable
INCOMPATIBILITY:	Reacts with Strong Acids to Generate Hydrogen Gas
HAZARDOUS DECOMPOSITION PRODUCTS:	Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:	N/A
WASTE DISPOSAL METHOD:	Solids — Sale as Scrap Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:	General — Recommended. Local — As Required.
PERSONAL PROTECTIVE EQUIPMENT:	
Respiratory Protection:	If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.
Eye Protection:	Recommended.
Gloves:	As required.
Other Clothing or Equipment:	As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION

**LATROBE STEEL COMPANY**

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650

AREA CODE 412 - 537-7711

TRADE NAME: **DYNAMAX (M-42)**GRADE SPECIFICATION DATE: **03/13/86**

DEC 1 8 1990

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)
COBALT	7440-48-4	0.1	(0.1)
CHROMIUM	7440-47-3	1.0	.50
IRON	1309-37-1	10	5
MOLYBDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .5*	.05
		(FUME) .1*	.05
TUNGSTEN	7440-33-7	N/E**	5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON~~* CEILING LIMITS **N/E - NOT ESTABLISHED~~

III. PHYSICAL DATA

BOILING POINT:	≥ 5000°F	MELTING POINT:	Approximately 2500°F
SPECIFIC GRAVITY (H ₂ O=1):	Approx. 7.8-8.2 (60°F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1):	N/A	SOLUBILITY IN H ₂ O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1):	N/A
APPEARANCE AND ODOR:	Various Shapes, Solid Odorless Metal		

IV. FIRE AND EXPLOSION DATA

FLASH POINT:	None	FIRE POINT:	None
--------------	------	-------------	------

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:	Inhalation	EMERGENCY FIRST AID:	Remove to fresh air, if condition continues - consult physician
	Eye Contact		Flush well with running water to remove particulate. Get medical attention.
	Skin Contact		Brush off excess dust. Wash area well with soap and water.
	Ingestion		Seek medical help if large quantities of material have been ingested.

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

VI. REACTIVITY DATA

STABILITY:	Chemically Stable
INCOMPATIBILITY:	Reacts with Strong Acids to Generate Hydrogen Gas
HAZARDOUS DECOMPOSITION PRODUCTS:	Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:	N/A
WASTE DISPOSAL METHOD:	Solids — Sale as Scrap Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:	General — Recommended. Local — As Required.
PERSONAL PROTECTIVE EQUIPMENT:	
Respiratory Protection:	If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.
Eye Protection:	Recommended.
Gloves:	As required.
Other Clothing or Equipment:	As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION

**LATROBE STEEL COMPANY**

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650

AREA CODE 412 - 537-7711

TRADE NAME: LESCO M-4 PMGRADE SPECIFICATION DATE: 02/22/88

DEC 18 1990

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)
CHROMIUM	7440-47-3	1.0	.50
IRON	1309-37-1	10	5
MOLYBDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .5* (FUME) .1*	.05 .05

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON

* CEILING LIMITS **N/E - NOT ESTABLISHED

III. PHYSICAL DATA

BOILING POINT:	≥ 5000°F	MELTING POINT:	Approximately 2500°F
SPECIFIC GRAVITY (H ₂ O=1):	Approx. 7.8-8.2 (60°F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1):	N/A	SOLUBILITY IN H ₂ O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1):	N/A
APPEARANCE AND ODOR:	Various Shapes, Solid Odorless Metal		

IV. FIRE AND EXPLOSION DATA

FLASH POINT:	None	FIRE POINT:	None
--------------	------	-------------	------

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:	Inhalation	EMERGENCY FIRST AID:	Remove to fresh air, if condition continues - consult physician
	Eye Contact		Flush well with running water to remove particulate. Get medical attention.
	Skin Contact		Brush off excess dust. Wash area well with soap and water.
	Ingestion		Seek medical help if large quantities of material have been ingested.

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

TUNGSTEN is not generally regarded as an industrial poison, however no dust when inhaled in sufficient amounts is completely inert.

VI. REACTIVITY DATA

STABILITY:	Chemically Stable
INCOMPATIBILITY:	Reacts with Strong Acids to Generate Hydrogen Gas
HAZARDOUS DECOMPOSITION PRODUCTS:	Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:	N/A
WASTE DISPOSAL METHOD:	Solids — Sale as Scrap Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:	General — Recommended. Local — As Required.
PERSONAL PROTECTIVE EQUIPMENT:	
Respiratory Protection:	If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.
Eye Protection:	Recommended.
Gloves:	As required.
Other Clothing or Equipment:	As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION

**LATROBE STEEL COMPANY**

SUBSIDIARY OF THE TIMKEN COMPANY

LATROBE, PENNSYLVANIA 15650

AREA CODE 412 - 537-7711

TRADE NAME: LESCO T-15 PMGRADE SPECIFICATION DATE: 07/11/88

DEC 18 1990

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)
COBALT	7440-48-4	0.1	(0.1)
CHROMIUM	7440-47-3	1.0	.50
IRON	1309-37-1	10	5
MOLYBDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .5* (FUME) .1*	.05 .05
TUNGSTEN	7440-33-7	N/E**	5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON

* CEILING LIMITS **N/E = NOT ESTABLISHED

III. PHYSICAL DATA

BOILING POINT:	≥5000°F	MELTING POINT:	Approximately 2500°F
SPECIFIC GRAVITY (H ₂ O=1):	Approx. 7.8-8.2 (80°F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1):	N/A	SOLUBILITY IN H ₂ O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1):	N/A
APPEARANCE AND ODOR:	Various Shapes, Solid Odorless Metal		

IV. FIRE AND EXPLOSION DATA

FLASH POINT: None FIRE POINT: None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:	Inhalation	EMERGENCY FIRST AID:	Remove to fresh air, if condition continues - consult physician
	Eye Contact		Flush well with running water to remove particulate. Get medical attention.
	Skin Contact		Brush off excess dust. Wash area well with soap and water.
	Ingestion		Seek medical help if large quantities of material have been ingested.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

TUNGSTEN is not generally regarded as an industrial poison, however no dust when inhaled in sufficient amounts is completely inert.

VI. REACTIVITY DATA

STABILITY:	Chemically Stable
INCOMPATIBILITY:	Reacts with Strong Acids to Generate Hydrogen Gas
HAZARDOUS DECOMPOSITION PRODUCTS:	Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:	N/A
WASTE DISPOSAL METHOD:	Solids — Sale as Scrap Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:	General — Recommended. Local — As Required.
PERSONAL PROTECTIVE EQUIPMENT:	
Respiratory Protection:	If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.
Eye Protection:	Recommended.
Gloves:	As required.
Other Clothing or Equipment:	As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

**CINCINNATI
MILACRON**

MATERIAL SAFETY DATA SHEET

PRINTED: February 9, 1992
DATE EFFECTIVE: 12/91
MSDS Number: 291

GENERAL SUPPLY CO.
1701 Kilgore Avenue
Muncie, IN 47304
(317) 281-1477

CIMTECH® 400

OCT - 5 1993



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name(s):	Product Code(s):	Manufacturer:	Emergency Telephone Number
CIMTECH 400	Undyed 291	Products Division/ Cincinnati Milacron	513-841-8181
CIMTECH 400	Pink 292	Marketing Company	
CIMTECH 400	Blue 293	4701 Marburg Avenue Cincinnati, OH 45209	Information Telephone Number 513-841-8964
Generic Name: Water-based metalworking fluid concentrate			

2. EMERGENCY OVERVIEW

Product is a clear liquid which may be dyed.
Product is alkaline and a primary eye irritant.
Highway spills in rainy weather could result in slippery road conditions.

No other significant health effects are associated with this material. Product concentrate is corrosive to aluminum. **UN1760**

3. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Hazardous Components</u>	<u>CAS Number</u>	<u>Max %</u>	
Ethanolamine	141-43-5	10	These ingredients may contribute to the acute product hazards listed under the Potential Health Effects section. Other substances, not "Hazardous" under the OSHA Hazard Communication Standard may be present. Further composition information may be made available to health professionals as provided in the standard.
Neodecanoic acid	26896-20-8	10	
Aminomethylpropanol	124-68-5	10	
Heptanoic acid	111-14-8	10	
Pelargonic acid	112-05-0	10	
Triethanolamine	102-71-6	10	

4. HAZARDS IDENTIFICATION

Potential Health Effects of Direct Exposure

	Product Concentrate	Product at Use Dilution
Inhalation	Not Applicable	Extended Exposure to mists may cause upper respiratory irritation
Eye Contact	Primary eye irritant	Will cause stinging sensation in the eye
Skin Contact	Not a primary skin irritant	Not irritating to the skin when used as directed and good personal hygiene is practiced
Ingestion	Not orally toxic	Swallowing small quantities may cause nausea or diarrhea

Toxicity data are available. Call 513-841-8964 (Health Information)

HAZARDS IDENTIFICATION (cont.)

When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splash guards, as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted.

Mild skin irritation (redness and dryness of hands) may be experienced when the diluted product has been contaminated by certain oils, by dissolved metals or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Cimcool Technical Services (513-841-8133) for specific recommendations.

Carcinogen Listings

NTP: No IARC: No OSHA: No

Signs and symptoms of exposure: Eye injury may result from contact with concentrated product. Skin irritation can result from improper use and handling of concentrate or mix.

Medical conditions generally aggravated by exposure: May aggravate existing skin irritation where further defatting or skin penetration could occur.

5. EMERGENCY AND FIRST AID PROCEDURES

Eyes -- In case of eye contact with concentrated product or diluted mix, flush immediately with running water for 15 minutes, then promptly get medical attention to check for possible irritation.

Skin contact-- In case of skin contact with product concentrate, wash with water as soon as possible.

Diluted product is not irritating to the skin when used as recommended and good personal hygiene is practiced. Remove severely contaminated clothing, including shoes. Launder before reuse. If irritation persists, get medical attention.

Ingestion-- If concentrate or mix is swallowed, **do not induce vomiting**. Dilute by drinking water or milk. Immediately contact physician and obtain treatment.

Swallowing small quantities of diluted product is not expected to cause injury or illness; but, as should be expected when drinking oily, soapy water, nausea, diarrhea or abdominal distress may be experienced.

Inhalation-- Not expected to be a probable route of exposure to product concentrate.

Inhalation of diluted mix can occur in applications where high mist levels are generated. OSHA has set a PEL of 15 mg/M³ for any airborne particulate as a nuisance level of exposure.

6. FIRE AND EXPLOSION HAZARD DATA

Flash Point (COC)	NA	NFPA/HMIS Codes
Flammable Limits	NA	Health
Lower Explosive Limit	NA	Flammability ..
Upper Explosive Limit	NA	Reactivity
Extinguishing Media	NA	Other
Special Firefighting Procedures	None	
Unusual Fire and Explosion Hazards ..	None	
Hazardous Combustion Products	Smoke, fumes and oxides of carbon	

7. ACCIDENTAL RELEASE MEASURES

Contain the spill, collect on absorbent material and discard as dictated by Federal, state and local regulations that may apply. Flush area thoroughly with water.

Reportable Quantity None

8. WASTE DISPOSAL

For Used Mix: Disposal procedures must comply with local, county, state and Federal regulations. If pre-treatment is needed, chemical emulsion breaking or ultrafiltration may be used. Contact Cimcool Technical Services (513-841-8133) for assistance.

For Unused Concentrate: Concentrate is not a hazardous waste, as defined under 40 CFR 261.

Cimcool Technical Services (513-841-8133) can provide a list of waste haulers for your area.

"Empty" Containers will contain a residue which is not considered a hazardous waste under RCRA regulations. Drums can be drained to a "drip dry" condition by inversion and can be offered for recycling or scrap.

9. HANDLING AND STORAGE

Use only as recommended by CINCINNATI MILACRON. Avoid all contact of concentrate with eyes or skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions -- Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

10. CONTROL MEASURES

Respiratory Protection-- Product is not volatile.

Ventilation-- For most applications, normal shop ventilation is adequate. However, when high mist levels are generated or where machines are close together or ventilation is inadequate, operators may experience respiratory irritation. For such applications, use of splash guards or mist collectors is recommended.

Protective Gloves-- Impervious gloves are required when handling product concentrate.

Eye Protection-- Safety shield or goggles required when handling concentrated product.

Other protective clothing or equipment-- Effective metalworking plant protective clothing as appropriate.

Work/Hygiene Practices-- Good personal hygiene should always be followed.

11. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point 212° F
Specific Gravity 1.0582
Vapor Pressure (mm Hg) Like water
Melting Point NA
Vapor Density NA

Evaporation Rate Like water
Solubility in Water 100% miscible
Appearance/Odor Clear/chemical
pH (concentrate) 9.5 - 9.8
pH (5% mix) 8.8 - 9.2

12. REACTIVITY

Stability Stable
Conditions to Avoid NA
Materials to Avoid Avoid addition of strong acids to product concentrate.

Hazardous Polymerization Will not occur.
Combustion Products Smoke, fumes, oxides of carbon.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name
Corrosive Liquid, n.o.s. (contains ethanolamines), PG III

ID Number UN1760

DOT Hazard Classification Corrosive

U.S. Harmonized Tariff Schedule Code:
3403.99.00.00.9

14. REGULATORY INFORMATION

Exposure Guidelines

<u>Regulated Material</u>	<u>OSHA PEL</u>	<u>OSHA STEL</u>	<u>ACGIH TLV</u>	<u>ACGIH STEL</u>
Ethanolamine	3 ppm	----	3 ppm	6 ppm

CERCLA

Components present in this product at a level which could require reporting under 40 CFR 302.4 None

SARA TITLE III

Extremely Hazardous Substances (302) . NA

Hazardous Substances (311,312):

Product concentrate is a hazardous substance as defined under the OSHA Hazard Communication Standard and may be reportable under the provisions of SARA Sections 311 and 312.

SARA Hazard Categories

Acute Health	.....	Yes
Chronic Health	.....	No
Fire	.....	No
Sudden Release of Pressure	.....	No
Reactive	.....	No

RCRA

Product concentrate does not meet the definition of a hazardous waste as defined under 40 CFR 261. It is possible that in use, the mix may be contaminated by metals or by chlorinated solvents and the final waste may meet the TCLP definition. Each facility should assess each waste stream to determine if the used fluid should be treated as a hazardous waste.

TSCA-- The ingredients of this product are on the TSCA inventory.

State Right-to-Know

Many states have enacted Community Right-To-Know laws which require information beyond that mandated by federal laws. Since some of these laws are inconsistent with the federal laws, the information in this sheet may not fully meet the requirements of every state.

California SCAQMD Rule 443.1 VOC's . . NA

Toxic Substances (313): Components present in the product at levels which could require reporting under the statute:

<u>Chemical Name</u>	<u>CAS #</u>	<u>Max %</u>
NA		

Glossary of Abbreviations

ACGIH . . American Conference of Governmental Industrial Hygienists
CAS . . . Chemical Abstracts Service
CERCLA . Comprehensive Environmental Response Compensation and Liability Act
CFR . . . Code of Federal Regulations
COC . . . Cleveland Open Cup
DOT . . . Department of Transportation
IARC . . . International Agency for Research on Cancer
NA Not Applicable
NTP . . . National Toxicology Program

OSHA . . . Occupational Safety and Health Administration
PEL Permissible Exposure Limit
RCRA . . . Resource Conservation and Recovery Act
SARA . . . Superfund Amendments and Reauthorization Act
SCAQMD . Southern California Air Quality Monitoring District
STEL . . . Short-Term Exposure Limit
TCLP . . . Toxicity Characteristics Leaching Procedure
TLV Threshold Limit Value
TSCA . . . Toxic Substances Control Act
VOC Volatile Organic Chemicals

NOTE: The opinions expressed herein are those of qualified experts within CINCINNATI MILACRON and of their suppliers. We believe that the information contained herein is current as of the date of this Material Data Sheet. Since the use of this information and of these opinions and the condition and use of the product are not within the control of CINCINNATI MILACRON, it is the user's obligation to determine the conditions of safe use of the product.

This is the last page

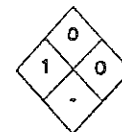
**CINCINNATI
MILACRON**

MATERIAL SAFETY DATA SHEET

PRINTED: February 9, 1992
DATE EFFECTIVE: 12/91
MSDS Number: 291

APR - 3 1992

CIMTECH® 400



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name(s):	Product Code(s):	Manufacturer:	Emergency Telephone Number
CIMTECH 400	Undyed 291	Products Division/ Cincinnati Milacron	513-841-8181
CIMTECH 400	Pink 292	Marketing Company	
CIMTECH 400	Blue 293	4701 Marburg Avenue Cincinnati, OH 45209	Information Telephone Number 513-841-8964
Generic Name: Water-based metalworking fluid concentrate			

2. EMERGENCY OVERVIEW

Product is a clear liquid which may be dyed.
Product is alkaline and a primary eye irritant.
Highway spills in rainy weather could result in slippery road conditions.

No other significant health effects are associated with this material. Product concentrate is corrosive to aluminum. UN1760

3. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Hazardous Components</u>	<u>CAS Number</u>	<u>Max %</u>	
Ethanolamine	141-43-5	10	These ingredients may contribute to the acute product hazards listed under the Potential Health Effects section. Other substances, not "Hazardous" under the OSHA Hazard Communication Standard may be present. Further composition information may be made available to health professionals as provided in the standard.
Neodecanoic acid	26896-20-8	10	
Aminomethylpropanol	124-68-5	10	
Heptanoic acid	111-14-8	10	
Pelargonic acid	112-05-0	10	
Triethanolamine	102-71-6	10	

4. HAZARDS IDENTIFICATION

Potential Health Effects of Direct Exposure

	Product Concentrate	Product at Use Dilution
Inhalation	Not Applicable	Extended Exposure to mists may cause upper respiratory irritation
Eye Contact	Primary eye irritant	Will cause stinging sensation in the eye
Skin Contact	Not a primary skin irritant	Not irritating to the skin when used as directed and good personal hygiene is practiced
Ingestion	Not orally toxic	Swallowing small quantities may cause nausea or diarrhea

Toxicity data are available. Call 513-841-8964 (Health Information)

HAZARDS IDENTIFICATION (cont.)

When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splash guards, as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted.

Mild skin irritation (redness and dryness of hands) may be experienced when the diluted product has been contaminated by certain oils, by dissolved metals or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Cimcool Technical Services (513-841-8133) for specific recommendations.

Carcinogen Listings

NTP: No IARC: No OSHA: No

Signs and symptoms of exposure: Eye injury may result from contact with concentrated product. Skin irritation can result from improper use and handling of concentrate or mix.

Medical conditions generally aggravated by exposure: May aggravate existing skin irritation where further defatting or skin penetration could occur.

5. EMERGENCY AND FIRST AID PROCEDURES

Eyes — In case of eye contact with concentrated product or diluted mix, flush immediately with running water for 15 minutes, then promptly get medical attention to check for possible irritation.

Skin contact-- In case of skin contact with product concentrate, wash with water as soon as possible.

Diluted product is not irritating to the skin when used as recommended and good personal hygiene is practiced. Remove severely contaminated clothing, including shoes. Launder before reuse. If irritation persists, get medical attention.

Ingestion-- If concentrate or mix is swallowed, **do not induce vomiting**. Dilute by drinking water or milk. Immediately contact physician and obtain treatment.

Swallowing small quantities of diluted product is not expected to cause injury or illness; but, as should be expected when drinking oily, soapy water, nausea, diarrhea or abdominal distress may be experienced.

Inhalation-- Not expected to be a probable route of exposure to product concentrate.

Inhalation of diluted mix can occur in applications where high mist levels are generated. OSHA has set a PEL of 15 mg/M³ for any airborne particulate as a nuisance level of exposure.

6. FIRE AND EXPLOSION HAZARD DATA

Flash Point (COC)	NA	NFPA/HMIS Codes
Flammable Limits	NA	Health
Lower Explosive Limit	NA	1
Upper Explosive Limit	NA	Flammability ..
Extinguishing Media	NA	0
Special Firefighting Procedures	None	Reactivity
Unusual Fire and Explosion Hazards ..	None	0
Hazardous Combustion Products	Smoke, fumes and oxides of carbon	Other
		NA

7. ACCIDENTAL RELEASE MEASURES

Contain the spill, collect on absorbent material and discard as dictated by Federal, state and local regulations that may apply. Flush area thoroughly with water.

Reportable Quantity None

8. WASTE DISPOSAL

For Used Mix: Disposal procedures must comply with local, county, state and Federal regulations. If pre-treatment is needed, chemical emulsion breaking or ultrafiltration may be used. Contact Cimcool Technical Services (513-841-8133) for assistance.

For Unused Concentrate: Concentrate is not a hazardous waste, as defined under 40 CFR 261.

Cimcool Technical Services (513-841-8133) can provide a list of waste haulers for your area.

"Empty" Containers will contain a residue which is not considered a hazardous waste under RCRA regulations. Drums can be drained to a "drip dry" condition by inversion and can be offered for recycling or scrap.

9. HANDLING AND STORAGE

Use only as recommended by CINCINNATI MILACRON. Avoid all contact of concentrate with eyes or skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions -- Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

10. CONTROL MEASURES

Respiratory Protection-- Product is not volatile.

Ventilation-- For most applications, normal shop ventilation is adequate. However, when high mist levels are generated or where machines are close together or ventilation is inadequate, operators may experience respiratory irritation. For such applications, use of splash guards or mist collectors is recommended.

Protective Gloves-- Impervious gloves are required when handling product concentrate.

Eye Protection-- Safety shield or goggles required when handling concentrated product.

Other protective clothing or equipment-- Effective metalworking plant protective clothing as appropriate.

Work/Hygiene Practices-- Good personal hygiene should always be followed.

11. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point 212° F
Specific Gravity 1.0582
Vapor Pressure (mm Hg) Like water
Melting Point NA
Vapor Density NA

Evaporation Rate Like water
Solubility in Water 100% miscible
Appearance/Odor Clear/chemical
pH (concentrate) 9.5 - 9.8
pH (5% mix) 8.8 - 9.2

12. REACTIVITY

Stability Stable
Conditions to Avoid NA
Materials to Avoid Avoid addition of strong acids to product concentrate.

Hazardous Polymerization Will not occur.
Combustion Products Smoke, fumes, oxides of carbon.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name Corrosive Liquid, n.o.s. (contains ethanolamines), PG III

ID Number UN1760

DOT Hazard Classification Corrosive

U.S. Harmonized Tariff Schedule Code:
3403.99.00.09

14. REGULATORY INFORMATION

Exposure Guidelines

Regulated Material	OSHA PEL	OSHA STEL	ACGIH TLV	ACGIH STEL
Ethanolamine	3 ppm	-----	3 ppm	6 ppm

CERCLA

Components present in this product at a level which could require reporting under 40 CFR 302.4 None

SARA TITLE III

Extremely Hazardous Substances (302) NA

Hazardous Substances (311,312):

Product concentrate is a hazardous substance as defined under the OSHA Hazard Communication Standard and may be reportable under the provisions of SARA Sections 311 and 312.

SARA Hazard Categories

Acute Health	Yes
Chronic Health	No
Fire	No
Sudden Release of Pressure	No
Reactive	No

RCRA

Product concentrate does not meet the definition of a hazardous waste as defined under 40 CFR 261. It is possible that in use, the mix may be contaminated by metals or by chlorinated solvents and the final waste may meet the TCLP definition. Each facility should assess each waste stream to determine if the used fluid should be treated as a hazardous waste.

TSCA-- The ingredients of this product are on the TSCA inventory.

State Right-to-Know

Many states have enacted Community Right-To-Know laws which require information beyond that mandated by federal laws. Since some of these laws are inconsistent with the federal laws, the information in this sheet may not fully meet the requirements of every state.

California SCAQMD Rule 443.1 VOC's NA

Toxic Substances (313): Components present in the product at levels which could require reporting under the statute:

Chemical Name	CAS #	Max %
NA		

Glossary of Abbreviations

ACGIH . . . American Conference of Governmental Industrial Hygienists
CAS . . . Chemical Abstracts Service
CERCLA . . . Comprehensive Environmental Response Compensation and Liability Act
CFR . . . Code of Federal Regulations
COC . . . Cleveland Open Cup
DOT . . . Department of Transportation
IARC . . . International Agency for Research on Cancer
NA . . . Not Applicable
NTP . . . National Toxicology Program

OSHA . . . Occupational Safety and Health Administration
PEL Permissible Exposure Limit
RCRA . . . Resource Conservation and Recovery Act
SARA . . . Superfund Amendments and Reauthorization Act
SCAQMD . . . Southern California Air Quality Monitoring District
STEL . . . Short-Term Exposure Limit
TCLP . . . Toxicity Characteristics Leaching Procedure
TLV Threshold Limit Value
TSCA . . . Toxic Substances Control Act
VOC Volatile Organic Chemicals

NOTE: The opinions expressed herein are those of qualified experts within CINCINNATI MILACRON and of their suppliers. We believe that the information contained herein is current as of the date of this Material Data Sheet. Since the use of this information and of these opinions and the condition and use of the product are not within the control of CINCINNATI MILACRON, it is the user's obligation to determine the conditions of safe use of the product.

This is the last page

IDENTITY (As Used on Label and List)

CUMITECH 400

SEP 6 1990

SECTION I

Manufacturer:

Emergency Telephone Number

513-841-8181

Products Division /
Cincinnati Milacron Marketing Company

Telephone Number for Information

513-841-8964

4701 Harburg Avenue
Cincinnati, Ohio 45209

Date Prepared

4/90

Section II - Hazardous Ingredients/Identity Information

Hazardous Components	OSHA PEL	ACGIH TLV	CAS No.	%
Ethanolamine	3 ppm	3 ppm	141-43-5	< 10
Neodecanoic acid	---	---	26896-20-8	< 10
Aminomethylpropanol	---	---	124-68-5	< 10
Heptanoic acid	---	---	111-14-8	< 10
Pelargonic acid	---	---	112-05-0	< 10
Triethanolamine	---	---	102-71-6	< 10

The ingredients listed above may contribute to the product hazard as listed in Section VI of this sheet.

Section III - Physical/Chemical Characteristics

Boiling Point 212°F

Specific Gravity (H₂O=1) 1.060

Vapor Pressure(mm Hg) Not applicable (NA)

Melting Point: NA

Vapor Density (air=1) NA

Evaporation Rate: Like water
(Butyl Acetate=1)

Solubility in Water 100%

Appearance and Odor Clear; sassafras

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) (OCC)

Flammable Limits NA LEL NA UEL NA

None; self-extinguishing.

Extinguishing Media No fire hazard.

Special Fire Fighting Procedures No fire hazard.

Unusual Fire and Explosion Hazards None.

Section V - Reactivity Data

CIMTECH 400

Stability: Stable **Hazardous Polymerization:** Will not occur
Conditions to Avoid: NA

Incompatibility (Materials to Avoid): Avoid contact of concentrate with strong acids.

Hazardous Decomposition or By-products: None.

Section VI - Health Hazard Data

Route(s) of Entry: **Inhalation?** YES **Skin?** YES **Ingestion?** NA

Health Hazards (Acute and Chronic) Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. No adverse chronic effects are expected when used as recommended.

Carcinogenicity: NTP? NO **IARC Monographs?** NO **OSHA Regulated?** NO

Signs and Symptoms of Exposure Eye damage may occur from contact with concentrate. This product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix).

Medical Conditions Generally Aggravated by Exposure May aggravate existing skin irritation where further defatting or skin penetration could occur.

Emergency and First Aid Procedures In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Thoroughly flush with water to sewer.

Waste Disposal Method FOR USED MIX: 1) Ultrafiltration for sewer disposal, or 2) sewer disposal if applicable according to local regulations, or 3) recycle equipment for reuse, or 4) treat with polymer or inorganic deemulsifiers, then dispose of top layer by incineration or landfill, and dispose of water layer in sanitary sewer.
FOR UNUSED CONCENTRATE: Incinerate, or contact vendor.

Precautions to Be Taken in Handling and Storing Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII - Control Measures

Respiratory Protection (Specify type) Product not volatile.

Ventilation Mechanical - General

Protective Gloves Waterproof gloves required when handling concentrate.

Eye Protection Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment Effective metalworking plant protective clothing as appropriate.

Work/Hygienic Practices Good personal hygiene should always be followed.

Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)



IDENTITY (As Used on Label and List)

CIMTECH 400 with MSL

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Products Division/	Emergency Telephone Number
Cincinnati Milacron Marketing Company		513-841-8181
Address (Number, Street, City, State, and ZIP Code)		Telephone Number for Information
4701 Marburg Avenue		513-841-8964
Cincinnati, Ohio 45209		Date Prepared
		1/88
		Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Ethanolamine	3 ppm	3 ppm	---	
Neodecanoic acid	---	---	---	
Aminomethylpropanol	---	---	---	
Heptanoic acid	---	---	---	
Pelargonic acid	---	---	---	
Triethanolamine	---	---	---	

The ingredients listed above may contribute to the product hazard as listed
in Section VI of this sheet.

Section III — Physical/Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H ₂ O = 1)	1.060
Vapor Pressure (mm Hg.)	Not applicable (NA)	Melting Point	NA
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	like water
Solubility in Water	100%		
Appearance and Odor	clear; sassafras		

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	NA	LEL	NA	UEL	NA
None; self-extinguishing						
Extinguishing Media						
No fire hazard						
Special Fire Fighting Procedures						
NA						
Usual Fire and Explosion Hazards						
None						

Section V — Reactivity Data

CIMTECH 400 with MSI

Stability	Unstable		Conditions to Avoid
	Stable	X	NA

Hazardous Decomposition or Byproducts

One. Avoid contact of concentrate with strong acids.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	NA

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	YES	Skin?	YES	Ingestion?	NA
--------------------	-------------	-----	-------	-----	------------	----

Health Hazards (Acute and Chronic)

WARNING: Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. Eye damage may occur from contact with concentrate. No adverse chronic effects expected when used as recommended.

Carcinogenicity:	NTP?	NO	IARC Monographs?	NO	OSHA Regulated?	NO
------------------	------	----	------------------	----	-----------------	----

Signs and Symptoms of Exposure

Eye damage may occur from contact with concentrate. This product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix).

Medical Conditions Generally Aggravated by Exposure	May aggravate existing skin irritation where further defatting or skin penetration could occur.
Emergency and First Aid Procedures	In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Thoroughly flush with water to sewer.

Waste Disposal Method FOR USED MIX: 1) Ultrafiltration for sewer disposal, or 2) recycle equipment for reuse, or 3) treat with polymer or inorganic deemulsifiers, then dispose of top layer by incineration or landfill, and dispose of water layer in sanitary sewer. FOR UNUSED CONCENTRATE: Incinerate, or contact vendor.

Precautions to Be Taken in Handling and Storing

Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions

Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII — Control Measures

Respiratory Protection (Specify Type)				Product not volatile.
Inhalation	Local Exhaust	NA	Special	NA
	Mechanical (General)	General	Other	NA

Protective Gloves Waterproof gloves required when handling concentrate. Eye Protection Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment

Effective metalworking plant protective clothing as appropriate.

Work/Hygiene Practices

Good personal hygiene should always be followed.

APPENDIX E

RESUME FOR JOHNIE R. BAKER

JOHNIE R. BAKER
Principal Engineer

B.S. Civil Engineering, 1974
Purdue University

Mr. Baker has over 19 years of professional experience as an engineer. His responsibilities have included project engineering management on large-site remediation projects for major corporate accounts. Related duties have included project development, proposal preparation, on-site project management, cost control and monitoring, and engineering report preparation. He also has expertise with on-site project management of plant closures and contaminated-site remediation. Field engineering management of hazardous waste projects have included completion of numerous projects in the following areas: underground storage tank (UST) management, emergency response, waste sampling and characterization, groundwater monitoring, soil boring investigations, lagoon closures, drum management, Sampling and Analysis Plans (SAPs), asbestos cleanups, hazardous waste storage area closures, Remedial Action Plans (RAPs), plant closures, spill cleanups, hazardous waste evaluations, decontamination projects, contaminated-soil cleanups (including PCBs), sludge solidification projects, lab pack projects, groundwater assessment, and client/agency negotiations. His experience is presented below.

Experience

Management Experience

- Served as National Accounts Manager for an environmental services company where his responsibilities involved management of all corporate accounts including numerous key, large-client accounts. Included working with clients on major remediation and hazardous waste disposal projects to insure environmental compliance and customer satisfaction, and to secure corporate waste disposal.
- Served as Division Manager for a remediation engineering company where his responsibilities included direct management of field crews involved with UST removals, plant cleanups and closures, emergency response, hazardous waste cleanups, and other types of remediation projects. Also included management of division's business activities, budgets, safety compliance, employee training, and engineering department coordination.
- Served as a Senior Project Engineer for an engineering company where he was responsible for the business development for the company since its creation. Specialized in field engineering supervision of hazardous waste management projects. Possesses a wide range of experience in all phases of hazardous waste management from plant closures to site decontamination projects, SAPs and actual sampling, waste characterizations, PCB cleanups, drum management projects, lagoon cleanups, tank removals, groundwater monitoring/recovery systems, and other projects involving hazardous wastes.

- Served as an Engineer Representative for an environmental waste disposal company where his responsibilities included potential industry customer contact and surveying of their waste disposal needs. Involved inspecting the process-generating industrial wastes, sampling of waste streams, characterization and interpretation of analysis. Assisted the industry by evaluating suitable sites for reclamation or for disposal of material not currently processed by his employer.
- Employed by the Indiana State Board of Health in their Water Pollution Control Division where he worked in the Compliance Section for the NPDES permit program. Required a broad knowledge of industrial processes and wastewater treatment. Assisted in developing state regulations to control the use and disposal of PCBs in Indiana.
- Employed by the Indiana State Board of Health in their Solid Waste Control Division where he was Coordinator for Indiana's Hazardous Waste Management Program. Involved in establishing criteria for the sampling and characterization of hazardous wastes, for the proper disposal of hazardous materials such as industrial wastes and pesticides, and in establishing criteria for sites disposing of hazardous wastes including the location of such sites. Worked very closely with industry to understand the processes which generated the hazardous wastes. Inspected solid waste landfills and industrial disposal sites for compliance with state and federal regulations. Also involved during this time in the PCB investigations for a major employer in Bloomington, Indiana, including surveys of disposal sites, collection of stream and groundwater samples, interpretation of data, and development of programs to prevent further contamination from these sites.

Project Experience

- Provided management of a metals machining manufacturer's plant closing, including removal of USTs, remediation of contaminated soils, soil and groundwater investigation, groundwater recovery system installation, and interior plant decontamination (asbestos removal oversight, pit cleaning, equipment decontamination, and plant floor decontamination). Activities included development of a work plan, cost estimating and cost control, preparation of status and final reports to document remedial work, and interaction with state and local agencies.
- Provided management of removal of a cyanide plating line, including decontamination and dismantling of plating tanks and equipment, cleanup and decontamination of floor areas, removal of contaminated concrete, and site restoration. Completed the majority of work in Level B protection which required strict on-site supervision and monitoring to meet Health and Safety Plan requirements.
- Provided management of several PCB-contaminated sites, including site investigation plan development and implementation, site decontamination, contaminated soil and concrete removal, proper transportation and disposal oversight, verification sampling and analysis, and final report preparation to document cleanup activities.
- Provided management of the closure and cleanup of chromium plating facilities, including total plant decontamination from ceiling to floor; cleaning and removal of plating equipment such as tanks, duct work, fume scrubber units, decontamination and removal of contaminated concrete and soils; site restoration for sale of property; site soil and groundwater investigation; and preparation of reports.

- Provided management of three lead battery plant sites, including development and implementation of a Health and Safety Plan, conducting air monitoring, developing a work plan, conducting plant decontamination, and removing lead-contaminated soils.
- Provided management of the closure of hydrofluoric and nitric acid pickling line for stainless steel, including development of new plating line operations and building; decontamination and dismantling of oil pickling line; site soil and groundwater assessment; and development of site closure including capping of area for closure.
- Provided management of the cleanup of wastewater treatment lagoons, including sampling and analysis for characterization, sludge removal and solidification, transportation oversight, disposal of residues monitoring, and ensuring project cost control.

Professional Training and Continuing Education Courses

40-Hour OSHA Health & Safety Training (29 CFR 1910.120), 1983
 16-Hour OSHA Emergency Response Training (29 CFR 1910.120), 1986
 8-Hour Health & Safety Refresher Training, 1993
 Hazardous Materials Response Training, Texas A&M, 1983
 Confined Space Entry Seminar, 1986
 Asbestos Technology Seminar, 1984
 PCB Transformer Retrofill Course, 1983
 Dale Carnegie Training, 1978
 CPR Certification; December, 1993

APPENDIX F

**HERITAGE LABORATORIES, INC.
QUALITY ASSURANCE REPORTS**

QUALITY CONTROL - the overall system of activities whose purpose is to document and control the quality of environmental data so that it meets the needs of the users.

A. Quality Control Checks - standards of samples from an independent source that are analyzed at a specified frequency.

1. Quality Control Check Standards - standard solutions from a source other than normal calibration standards that are certified and traceable. These standards are used to check the accuracy of a calibration curve.

2. Quality Control Check Sample (also known as Reference Materials) - samples obtained from an independent source for which the level(s) of analytes have been validated. These samples are prepared and analyzed with a sample set of similar matrix. If these samples have been obtained from the National Institute of Standards and Testing (formerly National Bureau of Standards), these are referred to as Standard Reference Materials.

B. QCTS - Quality Control Tracking System - the computerized system at EMS Heritage Laboratories, Inc. utilized to contain, compile and report quality control data.

1. Quality Control Types

a. BLA01 - Reagent blank, calibration blank.

An aliquot of de-ionized (DI) water containing the same reagents as the sample but is NOT taken through preparation. This sample is used as the calibration zero concentration for initial calibration purposes. The BLA01 is analyzed as a sample as frequently as required in the QAP. The BLA01 can be used to re-zero only after it has been analyzed as a sample. Instrument response is entered on bench sheets. If the instrument response is above the Control Limit when the BLA01 is run as a sample and calculated as a concentration, the samples back to the last acceptable BLA01 must be re-analyzed. If BLA01 is 0.5-0.99 of IDL, the concentration may be entered into the data base. Otherwise, enter less than 0.4X IDL. Entries into the data base MUST BE CONSISTENT, e.g., either instrument response OR concentration -NOT both, and must have units reported.

b. BLA02 - Method Blank or Preparation Blank.

Same as above but is carried through the complete steps of analysis from digestion/extraction/etc. in the exact same manner (e.g., same glassware, reagents, storage bottle) as the sample. BLA02 is matrix specific and must be run with each matrix and each prep run. A prep run consists of only 1 analyst on 1 day, utilizing the same reagents and glassware. Subtraction of the method blank is addressed by each

method. A general rule applies to the BLA02: If the BLA02 is equal to or exceeds the method detection limit (MDL), samples in that group must be re-prepped. Therefore a BLA02 must be run with each sample set. Instrument response is recorded on bench sheets, but concentration is entered into the QC data base in all cases. If BDL, entered $<0.4X$ IDL into the QC data base.

c. CAL01 - Calibration Standard.

Calibration standards (the number and frequency of which are specified in each method) are used to establish an analytical curve for that analyte based on absorbance, emission intensity, area or other type of measurable response for known standards. CAL01, CAL02, CAL03, etc., are prepared using exactly the same reagents used in the analysis of the sample. Note that some methods require a CDL standard be included as a CAL standard.

d. CCV - Continuing Calibration Verifications.

Analytical standard that is run with a frequency specified in the QAP - at a minimum frequency of 10% BUT may be alternated with ICV01 to meet the frequency requirements. The CCV may be from the same source as calibration standards or a different source depending on the method used. All runs must culminate with this sample's analysis except for GC/MS.

e. CDL01 - Contract Detection Limit Standard.

A reagent sample to verify analytes are quantifiable at the detection limit stated. The amount of analyte in this sample may be specified by a method, project, or client. In general, twice the analyte concentration of the regulatory detection line or CRDL is a good CDL01 amount. (Required weekly for drinking water organic analyses). Some methods mandate use of this standard for inclusion into the calibration curve.

f. DLCS - Duplicate Laboratory Control Sample (ICV02 or EPA supplied LCS).

Duplicate control sample of known analyte concentration and source analyzed by exactly the same method as the samples. DLCS must be of the same matrix as the samples but must be from a different source than the calibration standards (EPA or NIST traceable when possible). Results are expressed as % recovery and RPD. Also known as "Laboratory Fortified Blank" when analytes are spiked into reagent water.

g. DLCS1 - Duplicate Laboratory Control Sample (ICV01 or EPA supplied LCS).

Duplicate control sample of known analyte concentration and source analyzed by exactly the same method as the samples. DLCS must be of the same matrix as the samples but must be from a different source than the calibration standards (EPA or NIST traceable when possible). Results are expressed as % recovery and RPD. Also known as a "Laboratory Fortified Blank" when analytes are spiked into reagent water. This "1" designation is a programming device used to indicate that no separable prep exists for the method.

h. DPS01 - Reagent Duplicate, Matrix Spike.

An aliquot of sample (water, oil, S/S/S) spiked with a known quantity of the analyte of interest - but added after preparation or if no preparation is involved in analysis of sample. The sample is split and spiked with exactly the same amount of analyte. Results are expressed as Relative Percent Difference (RPD) or as required.

i. DPS02 - Duplicate Spike (Prepped).

Same as DPS01 but the sample is split in as representative a way as possible, spiked with equal amounts of the analyte, and carried through the preparation step(s). Results are expressed as RPD or as required.

j. DUP01 - Duplicate Sample Analysis (Non-prepped).

For samples not requiring digestion/extraction/etc., a homogeneous, representative aliquot (water, oil, S/S/S) is split and carried through the analytical steps to quantitation. Results are expressed as RPD.

k. DUP02 - Duplicate Sample Analysis (Prepped).

Same as DUP01 but split before any required preparation and carried through to quantitation exactly as its counterpart. Results are expressed as RPD.

l. ICV01 - Initial Calibration Verification.

This standard verifies the calibration curve, and this analyte must be from a different source as the calibration standards (EPA or NIST traceable when possible).

m. ICV02 - Initial Calibration Verification.

Same as ICV01 but added to the sample before any required preparation. May be equivalent to an LCS when reagent water is utilized as the spiking medium.

n. LCS - Laboratory Control Sample (ICV02 or EPA supplied LCS).

Control sample of known analyte concentration and source analyzed by exactly the same method as the samples. LCS should be of same matrix as samples (must utilize the same procedures) but must be from a different source than the calibration standards (EPA or NIST traceable when possible). Also known as "Laboratory Fortified Blank" when analytes are spiked into reagent water.

o. LCS01 - Laboratory Control Sample (ICV01 or EPA supplied LCS).

Control sample of known analyte concentration and source analyzed by exactly the same method as the samples. LCS should be of the same matrix as samples (must utilize the same procedures) but must be from a different source than the calibration standards (EPA or NIST traceable when possible). Also known as a "Laboratory Fortified Blank" when analytes are spiked into reagent water. This "01" designation is a programming device used to indicate that no separable prep exists for the method.

p. SPI01 - Matrix Spike (Standard Addition).

A post digestion/extraction spike, or a method with no separable prep. An aliquot of homogeneous sample (water, oil, S/S/S) fortified (spiked) with a known quantity of specific compound(s) and carried through the analysis and quantitation steps. At least one spike per matrix and concentration must be analyzed per run or frequency specified by QAP or SOW.

q. SPI02 - Matrix Spike (Pre-digestion/extraction; prepped).

Same as a SPI01 but is used when preparations are required. Calculate as a percent recovery, unless a method or client specifies differently.

r. SUR01 - Surrogate Spike (Organic analyses only).

Surrogate standards are added to every blank, sample, LCS, MS, MSL, and standard to evaluate analytical efficiency by measuring percent recovery (unless specified to report recoveries differently). A representative sample is taken, surrogates added, analyzed, and

quantitated. A SUR01 would not require preparation, or no separable prep exists for the method.

s. SUR02 - Surrogate Spike (Organic analyses only).

Same as SUR01 but surrogates are added before any preparation. Surrogates are unique compounds not normally detected in environmental samples.

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	24-SEP-93	A291069
	Complete	PO Number
	04-OCT-93	.....
	Printed	Sampled
	05-OCT-93	23-SEP-93

Sample Description DESCRIPTION: WET GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN
--

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 27-SEP-93 Test: G401.7.0 Reviewer: B. SHRAKE Review Date: 28-SEP-93 File ID: 3488 Run: R198043									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q791187	A291069	SOLIDS	92		91	Percent		1.1
LCS01	Q791186		SOLIDS	11.1359		11.1347	Percent	100	
SAMPLE	A291069		See Certificate of Analysis						
LCS01	Q791188		SOLIDS	11.1226		11.1201	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 29-SEP-93 Instrument: FAA Test: M610.5.0 Reviewer: D. CZERNY Review Date: 01-OCT-93 File ID: 026046 Run: R198335 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q793359		CHROMIUM	.5		.52	mg/L	104	
ICV01	Q793363		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q793366		CHROMIUM	.5		.505	mg/L	101	
ICV01	Q793369		CHROMIUM	.5		.507	mg/L	101.4	
ICV01	Q793372		CHROMIUM	.5		.53	mg/L	106	
ICV01	Q793375		CHROMIUM	.5		.516	mg/L	103.2	
ICV01	Q793378		CHROMIUM	.5		.512	mg/L	102.4	
ICV01	Q793381		CHROMIUM	.5		.521	mg/L	104.2	
DUP02	Q786393	A291069	CHROMIUM	.5		.513	mg/L		2.6
CCV	Q793358		CHROMIUM	2		1.97	mg/L	98.5	
BLA01	Q793360		CHROMIUM			< .02	mg/L		
CDL01	Q793361		CHROMIUM	.1		.116	mg/L	116	
LCS	Q786389		CHROMIUM	2		1.9	mg/L	95	
BLA02	Q786390		CHROMIUM			< .02	mg/L		
SAMPLE	A291069		See Certificate of Analysis						
CCV	Q793362		CHROMIUM	2		1.97	mg/L	98.5	
BLA01	Q793364		CHROMIUM			< .02	mg/L		
CDL01	Q793383		CHROMIUM	.1		.104	mg/L	104	

Notes < Less Than Lower Detection Limit

Quality Assurance Officer: _____

LA Busch

Last Page 1

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	24-SEP-93	A291070
	Complete	PO Number
	04-OCT-93	.....
	Printed	Sampled
	05-OCT-93	23-SEP-93

Sample Description

DESCRIPTION: DRY DUST FROM DRY GRINDING
LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

TOTAL SOLIDS EPA 160.3									
Analyst : B. PRIDEMORE		Analysis Date: 27-SEP-93				Test: G401.7.0			
Reviewer: B. SHRAKE		Review Date: 28-SEP-93 File ID: 3488				Run: R198043			
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q791187	A291069	SOLIDS	92		91	Percent		1.1
LCS01	Q791186		SOLIDS	11.1359		11.1347	Percent	100	
SAMPLE	A291070		See Certificate of Analysis						
LCS01	Q791188		SOLIDS	11.1226		11.1201	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190									
Analyst : A. STOCKBURGER			Analysis Date: 29-SEP-93			Instrument: FAA		Test: M610.5.0	
Reviewer: D. CZERNY			Review Date: 01-OCT-93			File ID: 026046		Run: R198335	
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A									
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q793359		CHROMIUM	.5		.52	mg/L	104	
/01	Q793363		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q793366		CHROMIUM	.5		.505	mg/L	101	
ICV01	Q793369		CHROMIUM	.5		.507	mg/L	101.4	
ICV01	Q793372		CHROMIUM	.5		.53	mg/L	106	
ICV01	Q793375		CHROMIUM	.5		.516	mg/L	103.2	
ICV01	Q793378		CHROMIUM	.5		.512	mg/L	102.4	
ICV01	Q793381		CHROMIUM	.5		.521	mg/L	104.2	
DUP02	Q786393	A291069	CHROMIUM	.5		.513	mg/L		2.6
CDL01	Q793361		CHROMIUM	.1		.116	mg/L	116	
CCV	Q793365		CHROMIUM	2		1.96	mg/L	98	
BLA01	Q793367		CHROMIUM			< .02	mg/L		
LCS	Q786389		CHROMIUM	2		1.9	mg/L	95	
BLA02	Q786390		CHROMIUM			< .02	mg/L		
SAMPLE	A291070		See Certificate of Analysis						
CCV	Q793368		CHROMIUM	2		1.95	mg/L	97.5	
BLA01	Q793370		CHROMIUM			< .02	mg/L		
CDL01	Q793383		CHROMIUM	.1		.104	mg/L	104	

Notes

< Less Than Lower Detection Limit

Quality Assurance Officer: _____

GA Busch

Last Page 1

m
134

GGM - 1 (metals)

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

SOW No.: NA

Lab Sample ID.

[illegible]

A291069
070

TCLP

Yes/No *Y/N*

Yes/No Y

Yes/No

Comments:

ref: _____



7901 West Morris Street
Indianapolis, IN 46231
Phone: 317/243-0811
FAX: 317/243-0360

CASE NARRATIVE
METALS SECTION

SAMPLE # A291069

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH
NO MODIFICATIONS.

Steven J. Endersen 10-1-93
STEVEN J. ENDERSEN

INORGANIC SECTION LEADER

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Heritage Labs

Contract: _____

Lab Code: NACase No.: NASAS No.: NASDG No.: NA

Concentration Units: ug/L

Analyte	W O M N	Initial Calibration			Continuing Calibration					M
		True	Found	%R	True	Found 1	%R 1	Found 2	%R 2	
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium		500	520	104	2000	1970	99	1950	98	A
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Lithium										
Strontium										
Tin										
Molybdenum										
Titanium										

U.S. EPA - CLP
INORGANICS

BLANKS

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NA

water (ug/L) TEL

Concentration Units: ug/L Solid (mg/kg) _____

Analyte	W O M N	Initial Calib.		Continuing Calibration Blanks (ug/L)						Prep. Blank		C	M
		Blank	C	1	C	2	C	3	C				
Aluminum													
Antimony													
Arsenic													
Barium													
Beryllium													
Cadmium													
Calcium													
Chromium		ND								ND			
Cobalt													
Copper													
Iron													
Lead													
Magnesium													
Manganese													
Mercury													
Nickel													
Potassium													
Selenium													
Silver													
Sodium													
Thallium													
Vanadium													
Zinc													
Lithium													
Strontium													
Tin													
Molybdenum													
Titanium													

U.S. EPA - CLP
INORGANICS

DUPLICATES

EPA SAMPLE

Lab Name: Heritage Labs

Contract: _____

A291069

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: A

Concentration Units:

water (ug/L) TCLP
solid (mg/kg)

Analyte	W O M N	★ Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt			500		513		3		
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Lithium									
Strontium									
Ti									
Molybdenum									
Titanium									

FORM VIII - LCIN

* control limit is 20% unless noted

5

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	06-OCT-93	A292240
	Complete	PO Number
	19-OCT-93	VERBAL
	Printed	Sampled
	20-OCT-93	05-OCT-93 14:40

Sample Description SAMPLE ID: 10-5A DESCRIPTION: WET GRINDING DUST LOCATION: LEVEL ONE REPORTING - STANDARD TAT

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 07-OCT-93 Test: G401.7.0 Reviewer: B. SHRAKE Review Date: 11-OCT-93 File ID: 3508-3510 Run: R198980									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q798805	A292153	SOLIDS	100		100	Percent		0
LCS01	Q798804		SOLIDS	10.7525		10.7509	Percent	100	
SAMPLE	A292240		See Certificate of Analysis						
LCS01	Q798811		SOLIDS	10.7058		10.7042	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 15-OCT-93 Instrument: FAA Test: M610.5.0 Reviewer: D. CZERNY Review Date: 19-OCT-93 File ID: 026129 Run: R199689 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD

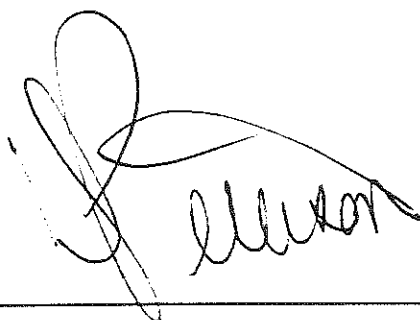
'01	Q805177		CHROMIUM	.5		.532	mg/L	106.4	
ICV01	Q805181		CHROMIUM	.5		.524	mg/L	104.8	
ICV01	Q805184		CHROMIUM	.5		.514	mg/L	102.8	
ICV01	Q805187		CHROMIUM	.5		.511	mg/L	102.2	
ICV01	Q805190		CHROMIUM	.5		.531	mg/L	106.2	
ICV01	Q805193		CHROMIUM	.5		.543	mg/L	108.6	
ICV01	Q805196		CHROMIUM	.5		.542	mg/L	108.4	
ICV01	Q805199		CHROMIUM	.5		.513	mg/L	102.6	
ICV01	Q805202		CHROMIUM	.5		.513	mg/L	102.6	
ICV01	Q805205		CHROMIUM	.5		.5	mg/L	100	
ICV01	Q805208		CHROMIUM	.5		.488	mg/L	97.6	
ICV01	Q805211		CHROMIUM	.5		.524	mg/L	104.8	
ICV01	Q805214		CHROMIUM	.5		.52	mg/L	104	
ICV01	Q805217		CHROMIUM	.5		.535	mg/L	107	
ICV01	Q805220		CHROMIUM	.5		.537	mg/L	107.4	
DUP02	Q791285	A292246	CHROMIUM	.111		.112	mg/L		.9
CCV	Q805204		CHROMIUM	2		2	mg/L	100	
BLA01	Q805206		CHROMIUM			< .02	mg/L		
LCS	Q791281		CHROMIUM	2		1.73	mg/L	86.5	
BLA02	Q791282	NA	CHROMIUM			< 0.004	mg/L		
SAMPLE	A292240		See Certificate of Analysis						
CCV	Q805207		CHROMIUM	2		2.02	mg/L	101	
BLA01	Q805209		CHROMIUM			< .02	mg/L		
CDL01	Q805222		CHROMIUM	.1		.118	mg/L	118	

Comments

Q791285 NOTE: * SAMPLE CONCENTRATION AND DUPLICATE CONCENTRATION DIFFERENCE OF < 1
Q791285 MULTIPLIED BY DETECTION LIMIT.

Notes

< *Less Than Lower Detection Limit*



Quality Assurance Officer: _____

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	06-OCT-93	A292246
	Complete	PO Number
	19-OCT-93	VERBAL
	Printed	Sampled
	20-OCT-93	05-OCT-93 14:50

Sample Description SAMPLE ID: 10-5B DESCRIPTION: DRY GRINDING DUST LOCATION: LEVEL ONE REPORTING - STANDARD TAT

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 07-OCT-93 Test: G401.7.0 Reviewer: B. SHRAKE Review Date: 11-OCT-93 File ID: 3508-3510 Run: R198980									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q798805	A292153	SOLIDS	100		100	Percent		0
LCS01	Q798804		SOLIDS	10.7525		10.7509	Percent	100	
SAMPLE	A292246		See Certificate of Analysis						
LCS01	Q798811		SOLIDS	10.7058		10.7042	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 15-OCT-93 Instrument: FAA Test: M610.5.0 Reviewer: D. CZERNY Review Date: 19-OCT-93 File ID: 026129 Run: R199689 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD

01	Q805177		CHROMIUM	.5		.532	mg/L	106.4	
ICV01	Q805181		CHROMIUM	.5		.524	mg/L	104.8	
ICV01	Q805184		CHROMIUM	.5		.514	mg/L	102.8	
ICV01	Q805187		CHROMIUM	.5		.511	mg/L	102.2	
ICV01	Q805190		CHROMIUM	.5		.531	mg/L	106.2	
ICV01	Q805193		CHROMIUM	.5		.543	mg/L	108.6	
ICV01	Q805196		CHROMIUM	.5		.542	mg/L	108.4	
ICV01	Q805199		CHROMIUM	.5		.513	mg/L	102.6	
ICV01	Q805202		CHROMIUM	.5		.513	mg/L	102.6	
ICV01	Q805205		CHROMIUM	.5		.5	mg/L	100	
ICV01	Q805208		CHROMIUM	.5		.488	mg/L	97.6	
ICV01	Q805211		CHROMIUM	.5		.524	mg/L	104.8	
ICV01	Q805214		CHROMIUM	.5		.52	mg/L	104	
ICV01	Q805217		CHROMIUM	.5		.535	mg/L	107	
ICV01	Q805220		CHROMIUM	.5		.537	mg/L	107.4	
DUP02	Q791285	A292246	CHROMIUM	.111		.112	mg/L		.9
CCV	Q805204		CHROMIUM	2		2	mg/L	100	
BLA01	Q805206		CHROMIUM			< .02	mg/L		
LCS	Q791281		CHROMIUM	2		1.73	mg/L	86.5	
BLA02	Q791282	NA	CHROMIUM			< 0.004	mg/L		
SAMPLE	A292246		See Certificate of Analysis						
CCV	Q805207		CHROMIUM	2		2.02	mg/L	101	
BLA01	Q805209		CHROMIUM			< .02	mg/L		
CDL01	Q805222		CHROMIUM	.1		.118	mg/L	118	

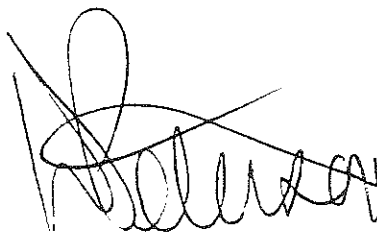
Comments

Q791285 NOTE: * SAMPLE CONCENTRATION AND DUPLICATE CONCENTRATION DIFFERENCE OF < 1
Q791285 MULTIPLIED BY DETECTION LIMIT.

Notes

< *Less Than Lower Detection Limit*

Quality Assurance Officer: _____

A handwritten signature in black ink, appearing to read "H. Bolander", is written over a horizontal line.

Last Page 2

M
142

U.S. EPA - CDP

metal

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Contract: Barnes + Hambury GCM-I

SAS No.: NA SDG No.: NA

SOW No.: NA

EPA Sample No.

Lab Sample ID.

[illegible]

A292240
246 T24

Were ICF interelement corrections applied?

Yes/No

Were ICP background corrections applied?

Yes/No

If yes--were raw data generated before application of background corrections?

Yes/No

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: _____

Date: _____

7-6100



7901 West Morris Street
Indianapolis, IN 46231
Phone: 317 243-0811
FAX: 317 243-0360

CASE NARRATIVE
METALS SECTION

SAMPLE # A2922404246

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH
NO MODIFICATIONS.

Steven Endersen 10-19-93
STEVEN E. ENDERSEN

INORGANIC SECTION LEADER

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: N

Concentration Units: ug/L

Analyte	W O M N	Initial Calibration			Continuing Calibration					M
		True	Found	%R	True	Found 1	%R 1	Found 2	%R 2	
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium		500	532	106	2000	1990	100	2000	100	A
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Lithium										
Strontium										
Tin										
Molybdenum										
Titanium										

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Heritage Labs

Contract: _____

Lab Code: NACase No.: NASAS No.: NASDG No.: N

Concentration Units: ug/L

Analyte	W O M N	Initial Calibration			Continuing Calibration					M
		True	Found	%R	True	Found 1	%R 1	Found 2	%R 2	
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt					2000	2020	101			A
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Lithium										
Strontium										
Tin										
Molybdenum										
Titanium										

U.S. EPA - CLP
INORGANICS

BLANKS

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NA

water (ug/L) TCLP

Concentration Units: ug/L Solid (mg/Kg)

Analyte	W O M N	Initial Calib. Blank		Continuing Calibration Blanks (ug/L)						Prep. Blank		M
		C		1	C	2	C	3	C	C		
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium		ND								ND		
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury												
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Lithium												
Strontium												
Tin												
Molybdenum												
Titanium												

U.S. EPA - CLP
INORGANICS

DUPLICATES

EPA SAMPLE NO

Lab Name: Heritage Labs

Contract: _____

A292246

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NA

Concentration Units:

water (ug/L) TCLP
solid (mg/kg) _____

Analyte	W O M N	★ Control Limit	Sample (S)		Duplicate (D)		RPD	Q	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt			120		121		1		
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Lithium									
Strontium									
Tin									
Molybdenum									
Titanium									

FORM VIII - LCIN

* control limit is 20% unless noted

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	14-OCT-93	A293259
	Complete	PO Number
	25-OCT-93	VERBAL
	Printed	Sampled
	26-OCT-93	14-OCT-93 14:45

Sample Description

SAMPLE I.D.: 10-14A
DESCRIPTION: WET GRINDING DUST
LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN

TOTAL SOLIDS EPA 160.3

Analyst : B. PRIDEMORE

Analysis Date: 18-OCT-93

Test: G401.7.0

Reviewer: B. SHRAKE

Review Date: 20-OCT-93 File ID: 3527-3528

Run: R199863

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q806401	A293154	SOLIDS	98		98	Percent		0
LCS01	Q806400		SOLIDS	10.2989		10.2983	Percent	100	
SAMPLE	A293259		See Certificate of Analysis						
LCS01	Q806402		SOLIDS	9.6797		9.6787	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst : A. STOCKBURGER

Analysis Date: 21-OCT-93 Instrument: FAA

Test: M610.5.0

Reviewer: D. CZERNY

Review Date: 25-OCT-93 File ID: 026160

Run: R200188

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
'01	Q809224		CHROMIUM	.5		.507	mg/L	101.4	
ICV01	Q809297		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q809300		CHROMIUM	.5		.52	mg/L	104	
ICV01	Q809303		CHROMIUM	.5		.522	mg/L	104.4	
ICV01	Q809306		CHROMIUM	.5		.525	mg/L	105	
ICV01	Q809309		CHROMIUM	.5		.516	mg/L	103.2	
ICV01	Q809312		CHROMIUM	.5		.508	mg/L	101.6	
DUP02	Q804527	A293590	CHROMIUM	.065		.076	mg/L		15.6
CDL01	Q809295		CHROMIUM	.1		.106	mg/L	106	
CCV	Q809299		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q809301		CHROMIUM			< .02	mg/L		
LCS	Q804523		CHROMIUM	.4		.39	mg/L	97.5	
BLA02	Q804524		CHROMIUM			< .02	mg/L		
SAMPLE	A293259		See Certificate of Analysis						
CCV	Q809302		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q809304		CHROMIUM			< .02	mg/L		
CDL01	Q809314		CHROMIUM	.1		.105	mg/L	105	

Notes

< Less Than Lower Detection Limit

Quality Assurance Officer: _____

Handwritten Signature: H. Busch

Last Page 1

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 101 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	14-OCT-93	A293258
	Complete	PO Number
	25-OCT-93	VERBAL
	Printed	Sampled
	26-OCT-93	14-OCT-93 14:40

Sample Description SAMPLE I.D.: 10-14B DESCRIPTION: DRY GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN
--

TOTAL SOLIDS EPA 160.3 Analyst : B. PRIDEMORE Analysis Date: 18-OCT-93 Test: G401.7.0 Reviewer: B. SHRAKE Review Date: 20-OCT-93 File ID: 3527-3528 Run: R199863									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q806401	A293154	SOLIDS	98		98	Percent		0
LCS01	Q806400		SOLIDS	10.2989		10.2983	Percent	100	
SAMPLE	A293258		See Certificate of Analysis						
LCS01	Q806402		SOLIDS	9.6797		9.6787	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst : A. STOCKBURGER Analysis Date: 21-OCT-93 Instrument: FAA Test: M610.5.0 Reviewer: D. CZERNY Review Date: 25-OCT-93 File ID: 026160 Run: R200188 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
1	Q809224		CHROMIUM	.5		.507	mg/L	101.4	
ICV01	Q809297		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q809300		CHROMIUM	.5		.52	mg/L	104	
ICV01	Q809303		CHROMIUM	.5		.522	mg/L	104.4	
ICV01	Q809306		CHROMIUM	.5		.525	mg/L	105	
ICV01	Q809309		CHROMIUM	.5		.516	mg/L	103.2	
ICV01	Q809312		CHROMIUM	.5		.508	mg/L	101.6	
DUP02	Q804527	A293590	CHROMIUM	.065		.076	mg/L		15.6
CDL01	Q809295		CHROMIUM	.1		.106	mg/L	106	
CCV	Q809299		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q809301		CHROMIUM			< .02	mg/L		
LCS	Q804523		CHROMIUM	.4		.39	mg/L	97.5	
BLA02	Q804524		CHROMIUM			< .02	mg/L		
SAMPLE	A293258		See Certificate of Analysis						
CCV	Q809302		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q809304		CHROMIUM			< .02	mg/L		
CDL01	Q809314		CHROMIUM	.1		.105	mg/L	105	

Notes < Less Than Lower Detection Limit

Quality Assurance Officer: _____

L.P. Busch

M
149

October 22, 1993

metals

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Contract: Barnes & Hanbury (444-1)

SDG No.: NA

EPA Sample No.

Lab Sample ID.

[illegible]

A293258
259

TCLP

Were ICP interelement corrections applied?

Yes/No

Were ICP background corrections applied?
If yes-were raw data generated before
application of background corrections?

Yes/No

Yes/No

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: _____

Date: _____

Title: _____

EMS LABORATORIES, INC.



7901 West Morris Street
Indianapolis, IN 46231
Phone: 317 243-0811
FAX: 317 243-0360

CASE NARRATIVE
METALS SECTION

SAMPLE # A293528-529

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH
NO MODIFICATIONS.

Steven J. Endersen 10-22-93
STEVEN J. ENDERSEN

INORGANIC SECTION LEADER

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NF

Concentration Units: ug/L

Analyte	W O M N	Initial Calibration			Continuing Calibration					M
		True	Found	%R	True	Found 1	%R 1	Found 2	%R 2	
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium		500	507	101	2000	2030	102	2030	102	A
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Lithium										
Strontium										
Tin										
Molybdenum										
Titanium										

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: N

Concentration Units: ug/L

Analyte	W O M N	Initial Calibration			Continuing Calibration					M
		True	Found	%R	True	Found	%R	Found	%R	
						1	1	2	2	
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt					2000	2030	102			A
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Lithium										
Strontium										
Tin										
Molybdenum										
Titanium										

U.S. EPA - CLP
INORGANICS

BLANKS

Lab Name: Heritage Labs Contract: _____
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: NA
 Concentration Units: water (ug/L) TCLP
ug/L Solid (mg/kg) _____

Analyte	W O M N	Initial		Continuing Calibration Blanks (ug/L)						Prep.		M
		Calib.	C	1	C	2	C	3	C	Blank	C	
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium		ND								ND		
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury												
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Lithium												
Strontium												
Tin												
Molybdenum												
Titanium												

5

U.S. EPA - CLP
INORGANICS

DUPLICATES

EPA SAMPLE NO.

Lab Name: Heritage Labs

Contract: _____

A293590

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NA

Concentration Units:

water (ug/L) TCLP
solid (mg/kg)

Analyte	W O M N	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt			65		76		16		
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Lithium									
Strontium									
Tin									
Molybdenum									
Titanium									

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	22-OCT-93	A293951
	Complete	PO Number
	05-NOV-93	VERBAL
	Printed	Sampled
	08-NOV-93	20-OCT-93 15:13

Sample Description DESCRIPTION: WET GRINDING DUST SAMPLE I.D.: 10-20A LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

TOTAL SOLIDS EPA 160.3 Analyst : B. PRIDEMORE Analysis Date: 25-OCT-93 Test: G401.7.0 Reviewer: P. ANDERSON Review Date: 27-OCT-93 File ID: 3538-3540 Run: R200545									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q811640	A293882	SOLIDS	97		97	Percent		0
LCS01	Q811639		SOLIDS	9.6045		9.604	Percent	100	
SAMPLE	A293951		See Certificate of Analysis						
LCS01	Q811643		SOLIDS	12.6553		12.6552	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst : A. STOCKBURGER Analysis Date: 01-NOV-93 Instrument: FAA Test: M610.5.0 Reviewer: D. CZERNY Review Date: 03-NOV-93 File ID: 026274 Run: R201140 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD

'01	Q816576		CHROMIUM	.5		.54	mg/L	108	
ICV01	Q816580		CHROMIUM	.5		.533	mg/L	106.6	
ICV01	Q817315		CHROMIUM	.5		.51	mg/L	102	
ICV01	Q817318		CHROMIUM	.5		.492	mg/L	98.4	
ICV01	Q817344		CHROMIUM	.5		.514	mg/L	102.8	
ICV01	Q817347		CHROMIUM	.5		.496	mg/L	99.2	
ICV01	Q817350		CHROMIUM	.5		.545	mg/L	109	
ICV01	Q817353		CHROMIUM	.5		.542	mg/L	108.4	
ICV01	Q817356		CHROMIUM	.5		.508	mg/L	101.6	
ICV01	Q817359		CHROMIUM	.5		.509	mg/L	101.8	
ICV01	Q817365		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q817368		CHROMIUM	.5		.497	mg/L	99.4	
ICV01	Q817371		CHROMIUM	.5		.483	mg/L	96.6	
DUP02	Q809855	A293951	CHROMIUM	.054		.053	mg/L		1.9
CDL01	Q816578		CHROMIUM	.1		.111	mg/L	111	
CCV	Q816579		CHROMIUM	2		2.04	mg/L	102	
BLA01	Q816581		CHROMIUM			< .02	mg/L		
LCS	Q809851		CHROMIUM	2		2	mg/L	100	
LCS	Q809851		CHROMIUM	2		1.87	mg/L	93.5	
BLA02	Q809852		CHROMIUM			< .02	mg/L		
BLA02	Q809852		CHROMIUM			.005	mg/L		
SAMPLE	A293951		See Certificate of Analysis						
CCV	Q817314		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q817316		CHROMIUM			< .02	mg/L		
CDL01	Q817373		CHROMIUM	.1		.079	mg/L	79	

Notes < Less Than Lower Detection Limit

Quality Assurance Officer: CB Boyle

Last Page 1

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC. 301 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	Received	Lab ID
	22-OCT-93	A293956
	Complete	PO Number
	05-NOV-93	VERBAL
	Printed	Sampled
	08-NOV-93	20-OCT-93 15:05

Sample Description
DESCRIPTION: DRY GRINDING DUST SAMPLE I.D.: 10-20B LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q811640	A293882	SOLIDS	97		97	Percent		0
LCS01	Q811639		SOLIDS	9.6045		9.604	Percent	100	
SAMPLE	A293956		See Certificate of Analysis						
LCS01	Q811643		SOLIDS	12.6553		12.6552	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190			
Analyst : A. STOCKBURGER	Analysis Date: 01-NOV-93	Instrument: FAA	Test: M610.5.0
Reviewer: D. CZERNY	Review Date: 03-NOV-93	File ID: 026274	Run: R201140
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311			

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
Y1	Q816576		CHROMIUM	.5		.54	mg/L	108	
ICV01	Q816580		CHROMIUM	.5		.533	mg/L	106.6	
ICV01	Q817315		CHROMIUM	.5		.51	mg/L	102	
ICV01	Q817318		CHROMIUM	.5		.492	mg/L	98.4	
ICV01	Q817344		CHROMIUM	.5		.514	mg/L	102.8	
ICV01	Q817347		CHROMIUM	.5		.496	mg/L	99.2	
ICV01	Q817350		CHROMIUM	.5		.545	mg/L	109	
ICV01	Q817353		CHROMIUM	.5		.542	mg/L	108.4	
ICV01	Q817356		CHROMIUM	.5		.508	mg/L	101.6	
ICV01	Q817359		CHROMIUM	.5		.509	mg/L	101.8	
ICV01	Q817365		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q817368		CHROMIUM	.5		.497	mg/L	99.4	
ICV01	Q817371		CHROMIUM	.5		.483	mg/L	96.6	
DUP02	Q809855	A293951	CHROMIUM	.054		.053	mg/L		1.9
CDL01	Q816578		CHROMIUM	.1		.111	mg/L	111	
CCV	Q816579		CHROMIUM	2		2.04	mg/L	102	
BLA01	Q816581		CHROMIUM			< .02	mg/L		
LCS	Q809851		CHROMIUM	2		2	mg/L	100	
LCS	Q809851		CHROMIUM	2		1.87	mg/L	93.5	
BLA02	Q809852		CHROMIUM			< .02	mg/L		
BLA02	Q809852		CHROMIUM			.005	mg/L		
SAMPLE	A293956		See Certificate of Analysis						
CCV	Q817314		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q817316		CHROMIUM			< .02	mg/L		
CDL01	Q817373		CHROMIUM	.1		.079	mg/L	79	

< less Than lower Detection Limit

Quality Assurance Officer: C. J. Zelle

Last Page 1



no tabs

Lab Name: Heritage Labs Contract: Banner-Herberg (GMM-1)
Lab Code: NA Case No.: NA SAS No.: NA SDG No.: N
SOW No.: NA

Lab Sample ID.

A243951
956

TCLP

Yes/No

Yes/No

Yes/No

Comments:

Signature: _____

Name: _____

Site:

Title: _____



7901 West Morris Street
Indianapolis, IN 46231
Phone: 317.243-0811
FAX: 317 243-0360

CASE NARRATIVE
METALS SECTION

SAMPLE # A293951; A293956

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH
NO MODIFICATIONS.

Steven J. Endersen 11-3-93
STEVEN J. ENDERSEN

INORGANIC SECTION LEADER

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: N

Concentration Units: ug/L

Analyte	W O M N	Initial Calibration			Continuing Calibration					M
		True	Found	%R	True	Found 1	%R 1	Found 2	%R 2	
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium		500	540	108	2000	2040	102	2030	102	A
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Lithium										
Strontium										
Tin										
Molybdenum										
Titanium										

U.S. EPA - CLP
INORGANICS

BLANKS

Lab Name: Heritage Labs

Contract: _____

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NA

water (ug/L) ICLP

Concentration Units: ug/L Solid (mg/kg) _____

Analyte	W O M N	Initial Calib. Blank	C	Continuing Calibration Blanks (ug/L)						Prep. Blank	C	M
				1	C	2	C	3	C			
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium		ND								ND		
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury												
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Lithium												
Strontium												
Tin												
Molybdenum												
Titanium												

U.S. EPA - CLP
INORGANICS

DUPLICATES

EPA SAMPLE NO.

Lab Name: Heritage Labs

Contract: _____

A293956

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: NA

Concentration Units:

water (ug/L) TCLP
solid (mg/kg) _____

Analyte	W O M N	★ Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium			120		122		2		
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Lithium									
Strontium									
Tin									
Molybdenum									
Titanium									

